



Watson bitte helfen Sie

Integration von IBM Bluemix Watson Services in IBM Domino

<https://hbauer.net>
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Das EntwicklerCamp 2016

Profil | Dateien x



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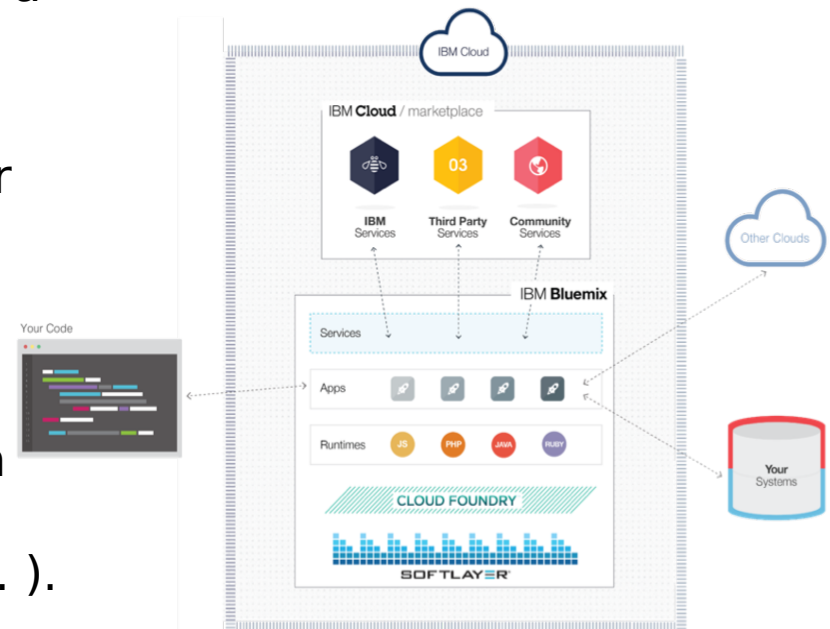
Chat | Weitere Aktionen ▾

Agenda

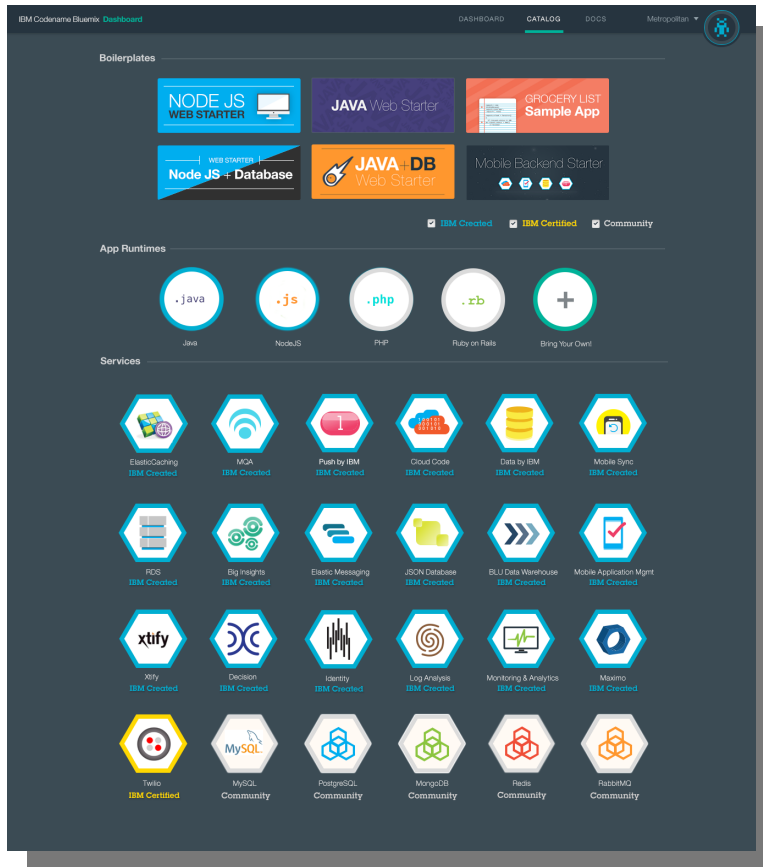
- Eine kurze Einführung in Bluemix und Watson Services
- Vorstellung der Beispiele
- Sprachklassifikation mit Trainingsdaten
- Textübersetzung und Bilderkennung
- Demonstration des Sprachklassifikationsbeispiel

Was ist Bluemix?

- BlueMix ist IBM's PaaS (Platform as a Service) Angebot
- Eine Cloud basierende Plattform für das
 - schnelle Entwickeln,
 - Verwalten und
 - Bereitstellen von Anwendungen verschiedenster Arten (Web, Mobil, Big Data, Social, ...).
- Entwickler können Services von IBM oder Partner in einem pay-as-you-go Model nutzen



Kombinierbare Objekte



DevOps

APIs und Services

Hybride Cloud
Umgebungen

Erweiterung von SaaS
Anwendungen

Bluemix Watson Services

The screenshot shows the IBM Bluemix Watson Services catalog. The top navigation bar includes links for DASHBOARD, SOLUTIONS, CATALOG (highlighted), PRICING, DOCS, and COMMUNITY. A user profile icon and a notification badge with '91' are also present. Below the navigation bar, a search bar is labeled 'Type to search'. On the left, a sidebar menu lists categories: Starters, Compute, Services, and Provider. The main content area is titled 'Services // The building blocks of any great app' and features a 'Watson' section with the description: 'Build cognitive apps that help enhance, scale, and accelerate human expertise'. A grid of 18 service tiles is displayed, each with an icon, name, and provider status.

Service Name	Provider
AlchemyAPI	IBM
Concept Expansion	IBM BETA
Concept Insights	IBM
Dialog	IBM
Document Conversion	IBM
Language Translation	IBM
Natural Language Classifier	IBM
Personality Insights	IBM
Relationship Extraction	IBM BETA
Retrieve and Rank	IBM
Speech To Text	IBM
Text To Speech	IBM
Tone Analyzer	IBM BETA
Tradeoff Analytics	IBM
Visual Recognition	IBM BETA
Cognitive Commerce™	Third Party
Cognitive Graph	Third Party
Cognitive Insights™	Third Party

Die heutigen Beispiele

- IBM Domino Anwendungen sollen erweitert werden um
 - Sprachklassifikation
 - Natürlichsprachliche Anfragen im Kontext von Rezepten sollen in Rezeptklassen zugeordnet werden
 - Text2Speech
 - Text soll vorgelesen werden
 - Text Translation
 - Texte sollen automatisiert übersetzt werden

Ablauf Sprachklassifikation

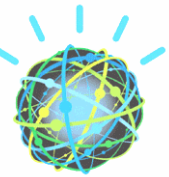
- Anlegen eines neuen Services über das Bluemix Webinterface
- Hochladen eines Trainingssets über die REST API
- Warten
- Erste Anfragen über die REST API
- Integration Domino Xpages



Natural Language
Classifier

IBM

Ablauf Sprachklassifikation



Anlegen eines neuen Services über das Bluemix Webinterface

- Hochladen eines Trainingssets über die REST API
- Warten
- Erste Anfragen über die REST API
- Integration Domino Xpages



Natural Language
Classifier

IBM

Demo Time

[Why Bluemix](#)
[Products](#)
[Solutions](#)
[Services](#)
[Resources](#)
[Docs](#)
[Support](#)
[Pricing](#)
[Sign up](#)
[Log in](#)

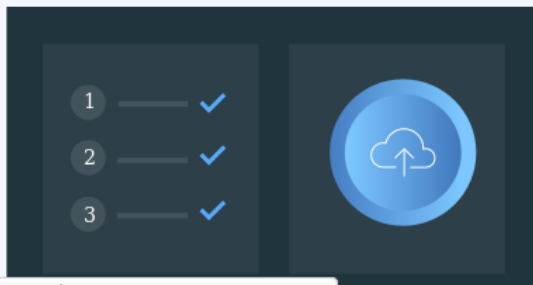
[IBM](#) > [Bluemix](#)

IBM Bluemix

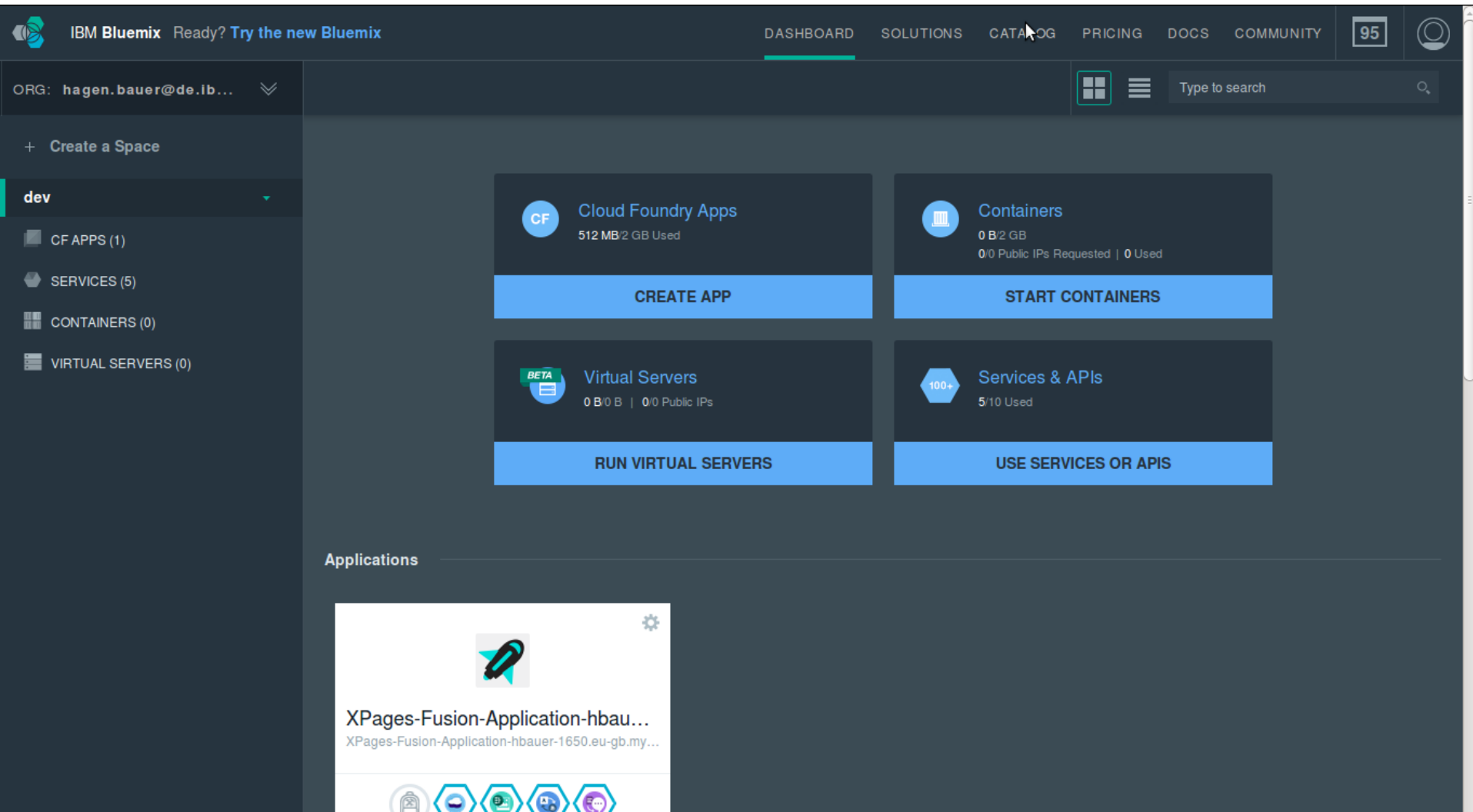
The cloud platform to accelerate innovation on both sides of the firewall

[Get started free](#)

Introducing the Swift Runtime for IBM Bluemix



Das Bluemix Dashboard



The screenshot displays the IBM Bluemix Dashboard. At the top, a dark navigation bar includes the Bluemix logo, the text "IBM Bluemix Ready? Try the new Bluemix", and a menu with "DASHBOARD", "SOLUTIONS", "CATALOG", "PRICING", "DOCS", and "COMMUNITY". A user profile icon and a "95" badge are on the right. Below the navigation bar, the left sidebar shows the organization "ORG: hagen.bauer@de.ibm..." and a "Create a Space" button. A dropdown menu for the "dev" space lists "CF APPS (1)", "SERVICES (5)", "CONTAINERS (0)", and "VIRTUAL SERVERS (0)". The main content area features four large tiles: "Cloud Foundry Apps" (512 MB/2 GB Used) with a "CREATE APP" button, "Containers" (0 B/2 GB, 0/0 Public IPs Requested | 0 Used) with a "START CONTAINERS" button, "Virtual Servers" (0 B/0 B, 0/0 Public IPs) with a "RUN VIRTUAL SERVERS" button, and "Services & APIs" (5/10 Used) with a "USE SERVICES OR APIS" button. At the bottom, an "Applications" section shows a card for "XPages-Fusion-Application-hbau..." with a rocket icon and a settings gear.

Den Service wählen

The screenshot displays the IBM Bluemix Catalog interface. At the top, the navigation bar includes links for DASHBOARD, SOLUTIONS, CATALOG (highlighted), PRICING, DOCS, and COMMUNITY. A user profile icon and a notification badge with the number 95 are also present. Below the navigation bar, a search bar prompts the user to 'Type to search'. On the left side, a sidebar menu categorizes services into Starters, Compute, and Services. The Services section is expanded, showing a list of categories including Watson, Mobile, DevOps, Web and Application, Network, Integration, Data and Analytics, Security, Storage, Business Analytics, and Internet of Things. The main content area is titled 'Services // The building blocks of any great app' and features a 'Watson' section with the description: 'Build cognitive apps that help enhance, scale, and accelerate human expertise'. This section displays a grid of 18 Watson services, each represented by a hexagonal icon and a label. The services are arranged in three rows of six. The first row includes:

- AlchemyAPI (IBM)
- Concept Expansion (IBM BETA)
- Concept Insights (IBM)
- Dialog (IBM)
- Document Conversion (IBM)
- Language Translation (IBM)

 The second row includes:

- Natural Language Classifier (highlighted with a 'View More' button)
- Personality Insights (IBM)
- Relationship Extraction (IBM BETA)
- Retrieve and Rank (IBM)
- Speech To Text (IBM)
- Text To Speech (IBM)

 The third row includes:

- Tone Analyzer (IBM BETA)
- Tradeoff Analytics (IBM)
- Visual Recognition (IBM BETA)
- Cognitive Commerce™ (Third Party)
- Cognitive Graph (Third Party)
- Cognitive Insights™ (Third Party)

Den Service konfigurieren

 IBM Bluemix Ready? [Try the new Bluemix](#)

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY 95 

[← Back to All Categories](#)



Natural Language Classifier

IBM

PUBLISH DATE
02/23/2016

AUTHOR
IBM

TYPE
Service

LOCATION
US South

[VIEW DOCS](#)

The Natural Language Classifier service applies cognitive computing techniques to return the best matching classes for a sentence or phrase. For example, you submit a question and the service returns keys to the best matching answers or next actions for your application. You create a classifier instance by providing a set of representative strings and a set of one or more correct classes for each training. After training, the new classifier can accept new questions or phrases and return the top matches with a probability value for each match.

Natural Language Classifier

Using the Service



Pick a plan

Monthly prices shown are for country or region: [Germany](#)

Plan	Features	
✓ Standard	1 Natural Language Classifier instance free per month 1000 API calls free per month 4 Training Events free per month	€15.04 EUR/ Instance per month €0.0026 EUR/ API call €2.26 EUR/ Training Event

 You will be charged per API call, per instance, and per training event

Add Service

Space:

dev

App:

Leave unbound

Service name:

hb-rezepte

Credential name:

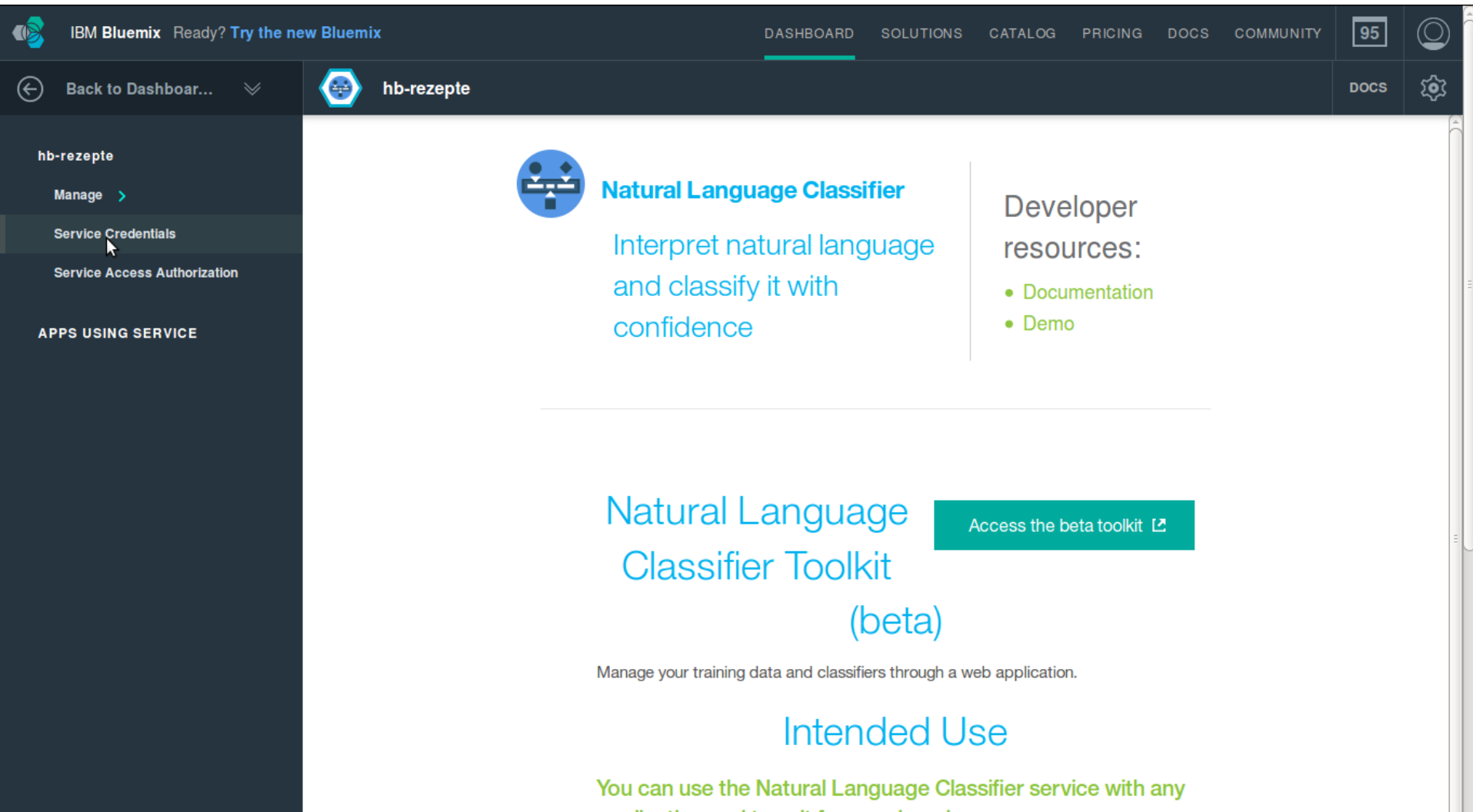
hb-cred

Selected Plan:

Standard

[CREATE](#)

Der Service ist startklar



The screenshot shows the IBM Bluemix console interface. At the top, the header includes the IBM Bluemix logo and navigation links: DASHBOARD, SOLUTIONS, CATALOG, PRICING, DOCS, and COMMUNITY. A user profile icon and a notification badge with the number 95 are also present. Below the header, a dark sidebar on the left contains a 'Back to Dashboard...' link and a list of service management options: 'hb-rezepte' (selected), 'Manage', 'Service Credentials', 'Service Access Authorization', and 'APPS USING SERVICE'. The main content area displays the 'hb-rezepte' service details. It features a blue icon representing the Natural Language Classifier, followed by the title 'Natural Language Classifier' and a description: 'Interpret natural language and classify it with confidence'. To the right, under 'Developer resources:', there are links for 'Documentation' and 'Demo'. Below this, the 'Natural Language Classifier Toolkit (beta)' is highlighted, with a green button labeled 'Access the beta toolkit'. At the bottom, the 'Intended Use' section begins with the text: 'You can use the Natural Language Classifier service with any'.

IBM Bluemix Ready? [Try the new Bluemix](#)

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY 95

Back to Dashboard... hb-rezepte DOCS

hb-rezepte

Manage >

Service Credentials

Service Access Authorization

APPS USING SERVICE

 **Natural Language Classifier**

Interpret natural language and classify it with confidence

Developer resources:

- [Documentation](#)
- [Demo](#)

Natural Language Classifier Toolkit (beta)

[Access the beta toolkit](#)

Manage your training data and classifiers through a web application.

Intended Use

You can use the Natural Language Classifier service with any

Die Service Kennwörter merken

 IBM Bluemix Ready? [Try the new Bluemix](#)

DASHBOARD SOLUTIONS CATALOG PRICING DOCS COMMUNITY 95 

 Back to Dashboar... 

 hb-rezepte DOCS 

hb-rezepte

Manage

Service Credentials >

Service Access Authorization

APPS USING SERVICE

Service Credentials

Cloud Foundry provides your credentials in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[ADD CREDENTIALS](#)

NAME	hb-cred	DELETE
------	---------	--------

SERVICE CREDENTIALS

```
{  "credentials": {    "url": "https://gateway.watsonplatform.net/natural-language-classifier/api",    "username": "3877eb90-8e9f-40c0-ae72-37cb17b3e087",    "password": "XXXXXXXXXXXX7"  }}
```

Ablauf Sprachklassifikation

- Anlegen eines neuen Services über das Bluemix Webinterface
-  • Hochladen eines Trainingssets über die REST API
- Warten
- Erste Anfragen über die REST API
- Integration Domino Xpages



Natural Language
Classifier

IBM

Warum

- cURL (Client URL Request Library) ist ein Kommandozeilen-Programm zum Übertragen von Dateien in Rechnernetzen.
- Es ist Bestandteil der meisten Linux-Distributionen und auch von Mac OS X.
- Es eignet sich gut um schnell und einfach REST Api Aufrufe zu starten
- REST API Aufrufe können gut in einem Editor vorbereitet werden

```
curl -d "user=foo&pass=geheim" http://www.url.de/getthis/post.cgi
```


20 Zeilen Trainingsset

Cheese whirls	bread
Seeded wholemeal loaf	bread
rosemary focaccia	bread
Cheat's sourdough	bread
chilli cornbread	bread
Steamed bao buns	bread
walnut rolls	bread
Focaccia with pesto & mozzarella	bread
Ham & tomato Stromboli	bread
Garlic bread pizzas	bread
Classic white loaf	bread

20 Zeilen Trainingsset

Springtime spaghetti & meatballs	pasta
Orecchiette with anchovies & purple sprouting broccoli	pasta
Baked conchiglioni with sausage sage & butternut squash	pasta
Venetian duck ragu	pasta
Pilchard puttanesca	pasta
Tagliatelle with vegetable ragu	pasta
Easy lasagne	pasta
Salsa spaghetti with sardines	pasta
Broccoli & sage pasta	pasta

Die Testfragen

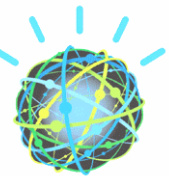
Red onion Gruyère & rosemary fougasse	
Malted walnut seed loaf	
Olive bread swirls	
Fettuccine with seared scallops & prosciutto	
Walnut & red pepper pesto	

Anlegen der Trainingsdaten



Ablauf Sprachklassifikation

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Natural Language
Classifier

IBM

In der Zwischenzeit schon eine andere Demo

XPages Bluemix Fusion

Home

Database Services

Cloudant

Watson Services

Text To Speech

Text Translation

Image Recognition

IBM XPages Bluemix Fusion Demo



This XPages example application running on Bluemix uses a number of different services available from the Bluemix catalog.

Use the navigation menu on the left of the application to access the different demo pages.

...

ich hab da schon 'was vorbereitet

Zurück zur Sprachklassifikation

Ablauf Sprachklassifikation

- Anlegen eines neuen Services über das Bluemix Webinterface
- Hochladen eines Trainingssets über die REST API

Warten

Erste Anfragen über die REST Api

- Integration in Domino Xpages



Natural Language
Classifier

IBM

Schon fertig?

Applications Places

File Edit View Search Terminal Help

```
$curl -i -u "a243fc21-8c94-43d3-81e1-e0af1382ff3c":"R3bd1SmdsRjF"\  
> "https://gateway.watsonplatform.net/natural-language-classifier/api/v1/\br/>> classifiers/2eb68ax27-nlc-156"
```



08:19



hbauer

Es kann losgehen

```
Applications Places
File Edit View Search Terminal Help
Content-Type: application/json
Date: Tue, 01 Mar 2016 07:20:50 GMT
Server: -
Set-Cookie: Watson-DPAT=x%2FX2ZUN%2BBccJSq31MDkhGW%2BfVH%2FmoC8%2BI7nYABWJqMxvzFRDQgf1eDMoyzftCFRQUxyv1Pmej1WHeA9
1ChXACbv8FNs2fxoKDZuQFCGPVEBwPdVIV2ptjAK7XvV9Gtuf6RxI2t21oTMgBytTwmdKIKDNqhH3NB0TnG5ePcJ6CR4N8qIUNP3stH7htFcpjq%2
FN74gQUFivNCFv%2FRUXlJdSK6mPR8YBQVVJwrhgqZnx7GI42mZSggazQT24ZP%2FEkN4j%2Bll7esgx5vVwN2yLegJ39ByEbTaisnUbvV%2Bma7K
OMTFRy1Wadb5an0zyZ%2BvZfgRkZ8PHkH%2FSd0hMt%2FX0%2FUu%2FGToRVWC%2BMG0mzyfDeeV4BCUldTOzcG5mE2j0YoUo3kHVEHHrDPiW%2B
L2CAxt1AQlXUv9RrzoUsaPl4T1mFKpIJXDvyvG5erSeyxuIPHD%2B97WwJRnZJCnYz5SE37oummuCPp7JA8Si8meosY1Uy1tvNNe8YJCq%2BD8K0j
k3pkI0XvIS8kZ2%2B9QcoRmE%2FKqn%2BP759rJ6jeV9qucAfsYEz4UvHGx%2FSAMlF26un1GA4Q7zFZFJzmo4BtLwHZJlJCmdJLHz5X42BGHfI8G
h3Z%2ByZKeW%2F%2Bh49sQ78eZL28gl%2B%2BH5dRszJHngGTShW0f3KfGhUG8c0db9PKdTpnYXqme3SI9Vy9h8K528bT4qr8qyM6bC9J%2BjB27c
ndphj5BA9%2BJUqgNPhpnNPqIQMEFJ41rykSrpBXe4ismCbaWv7FJ2xYocYpIkvZ4C9oB27NDo9b0kzi4smmFkG%2FJU5%2BtN54HCU%2FvXVMoFn
dSVj4tQv7lfn1I1XCPrJXgWMvbJCNWA%2B5rJw9xYl%2ByDaOk%2BEBj%2Fg38svwi4T4crgYVzolKkUWiUYfq0puySz1pmxVlM2G4iSE7pCJCQA%
3D%3D; path=/natural-language-classifier/api; secure; HttpOnly
X-Client-IP: 195.212.29.173
X-Global-Transaction-ID: 3738713
X-DP-Watson-Tran-ID: csf_platform_prod_dp01-3738713

{
  "classifier_id" : "2eb68ax27-nlc-156",
  "name" : "TutorialClassifier",
  "language" : "en",
  "created" : "2016-03-01T07:02:15.244Z",
  "url" : "https://gateway.watsonplatform.net/natural-language-classifier/api/v1/classifiers/2eb68ax27-nlc-156",
  "status" : "Available",
  "status_description" : "The classifier instance is now available and is ready to take classifier requests."
}
```

Wie wird „garlic bread“ klassifiziert?

```
Applications Places
File Edit View Search Terminal Help
$curl -G -u "a243fc21-8c94-43d3-81e1-e0af1382ff3c":"R3bd1SmdsRjF" \
> "https://gateway.watsonplatform.net/natural-language-classifier/api/v1\
> /classifiers/2eb68ax27-nlc-156/classify" \
> --data-urlencode "text=how about some garlic bread"
{
  "classifier_id" : "2eb68ax27-nlc-156",
  "url" : "https://gateway.watsonplatform.net/natural-language-classifier/api/v1/classifiers/2eb68ax27-nlc-156",
  "text" : "how about some garlic bread",
  "top_class" : "bread",
  "classes" : [ {
    "class_name" : "bread",
    "confidence" : 0.9307367409407368
  }, {
    "class_name" : "pasta",
    "confidence" : 0.06926325905926323
  } ]
}
```

(Der ist einfach)

Wie wird „Red onion Gruyère & rosemary fougasse“ klassifiziert?

```
Applications Places
File Edit View Search Terminal Help
$ curl -G -u "a243fc21-8c94-43d3-81e1-e0af1382ff3c":"R3bd1SmdsRjF" \
> "https://gateway.watsonplatform.net/natural-language-classifier/api/v1/\
> classifiers/2eb68ax27-nlc-156/classify" \
> --data-urlencode "text=Red onion Gruyère & rosemary fougasse"
{
  "classifier_id" : "2eb68ax27-nlc-156",
  "url" : "https://gateway.watsonplatform.net/natural-language-classifier/api/v1/classifiers/2eb68ax27-nlc-156",
  "text" : "Red onion Gruyère & rosemary fougasse",
  "top_class" : "bread",
  "classes" : [ {
    "class_name" : "bread",
    "confidence" : 0.7203628075370415
  }, {
    "class_name" : "pasta",
    "confidence" : 0.058286530569542534
  } ]
}
```

Begriffe kommen nicht im Trainingsset vor
werden aber „richtig eingeteilt“

Ablauf Sprachklassifikation

- Anlegen eines neuen Services über das Bluemix Webinterface
- Hochladen eines Trainingssets über die REST API
- Warten
- Erste Anfragen über die REST API Integration Domino Xpages



Natural Language
Classifier

IBM

So könnte eine Anwendung aussehen

XPages Bluemix Fusion

localhost/xpagesFusion2.nsf/classify.xsp

Suchen

XPages Bluemix Fusion

Home

Database Services

Cloudant

Watson Services

Text To Speech

Text Translation

Image Recognition

Language Classifier

IBM Domino Anwendungen und der Watson Language Classifier

Der Service Natural Language Classifier verwendet Maschinenlernalgorithmen, um für kurze Texteingaben die am besten passenden vordefinierten Klassen zurückzugeben. Natural Language Classifier ist für die Arbeit mit kurzen Texten optimiert und kann für jede beliebige Domäne oder Anwendung trainiert werden.

Texteingabe:

Red onion Gruyère & rosemary fougasse

Classify

Powered by IBM Watson

Text Classifiers

bread	92,51%
pasta	7,49%

Eine einfache Domino Maske
mit einem Button der
etwas Java aufruft

The screenshot displays the IBM Domino Designer interface with the following components:

- Top Tab Bar:** Contains several open files including `*classify - XPage`, `ImageRecognition.java`, `*Compare LanguageClassification.jav...`, `.xsp xpagesFusion2.nsf - Web Service Prov...`, and `*LanguageClassification.java`.
- Left Column:** A tree view showing the page structure:
 - Page 1
 - Page 2 (selected)
 - Subpage 1
 - Subpage 2
 - Subpage 3
 - Page 3
- Main Design Area:**
 - Title:** "IBM Domino Anwendungen und der Watson Language Classifier".
 - Description:** "Der Service Natural Language Classifier verwendet Maschinenlernalgorithmen, um für kurze Texteingaben die am besten passenden vordefinierten Klassen zurückzugeben. Natural für die Arbeit mit kurzen Texten optimiert und kann für jede beliebige Domäne oder Anwendung trainiert werden."
 - Form:** A text input field labeled "Texteingabe:".
 - Action:** A "Classify" button, highlighted with a red rectangle, with the text "Powered by IBM Watson" below it.
 - Text Classifiers:** A list of classifiers at the bottom, including `(classifierHome)` and `(classifierRecent)`.
- Bottom Panels:**
 - Properties:** Shows the "Design" and "Source" tabs.
 - Events:**
 - Mouse:** A list of mouse events including `onclick`, `ondblclick`, `onmousedown`, `onmouseup`, `onmouseover`, `onmousemove`, and `onmouseout`.
 - Focus:** A section for focus-related events.
 - Key:** A section for key-related events.
 - Script Editor:**
 - Client:** Selected tab.
 - Simple Actions:** Radio button.
 - Script Editor:** Selected radio button.
 - Instructions:** "Write a server-side JavaScript expression to run when the specified event occurs."
 - Code:**

```
var text = getComponent("textContent").getValue();
var newText = text.trim();
if (null != newText && newText != "") {
    viewScope.textError = false;
    var result = classify.getClassification(newText);
}
if (null != result) {
    viewScope.watsonTags = result;
} else { println("tag analysis failed"); }
```

.... und der einfache Java Code
der die „bekannten URLs“
aufruft

```

classif - XPage x ImageRecognition.java x *Compare LanguageClassification.jav... x .xsp xpagesFusion2.nsf - Web Service Prov... x *LanguageC
import java.util.ArrayList;
import org.apache.http.client.fluent.Response;
import org.apache.http.util.EntityUtils;
import com.ibm.commons.util.io.json.JsonException;
import com.ibm.commons.util.io.json.JsonJavaArray;
import com.ibm.commons.util.io.json.JsonJavaObject;
import com.ibm.xsp.bluemix.util.BluemixContextUtil;
import com.ibm.xsp.bluemix.util.RestUtil;

public class LanguageClassification implements Serializable {
    private static final long serialVersionUID = 1L;
    public static final String SERVICE_NAME = "language_translation";
    public String classifier = "2eb68ax27-nlc-156"; // Hardcoded Watson url/credentials for local testing
    public String baseUrl = "https://gateway.watsonplatform.net/natural-language-classifier/api";
    public String username = "a243fc21-8c94-43d3-81e1-e0af1382ff3c";
    public String password = "R3bd1SmdsRjF";
    private BluemixContextUtil bluemixUtil;
    private RestUtil rest;

    public LanguageClassification() {
        bluemixUtil = new BluemixContextUtil(SERVICE_NAME, username, password, baseUrl);
        rest = new RestUtil();
    }

    public ArrayList<String[]> getClassification(String text) throws URISyntaxException, IOException, JsonException {
        String getUrl = URLEncoder.encode(text, "UTF-8");
        String postUrl = bluemixUtil.getBaseUrl() + "/v1/classifiers/" + classifier + "/classify?text=" + getUrl;
        Response response2 = rest.get(postUrl, bluemixUtil.getAuthorizationHeader());
        String content = EntityUtils.toString(response2.returnResponse().getEntity());
        JsonJavaObject jsonData = rest.parse(content);
        ArrayList<String[]> tags = getSuggestedTags(jsonData);
        return tags;
    }

    public ArrayList<String[]> getSuggestedTags(JsonJavaObject data) {
        ArrayList<String[]> tags = new ArrayList<String[]>();
        JsonJavaArray images = data.getAsArray("classes");
        if (images != null) {
            for (int i = 0; i < images.size(); i++) {
                System.out.println(i);
                JsonObject jsonObj = images.getAsObject(i);
                String tagName = jsonObj.getString("class_name");
                double score = jsonObj.getDouble("confidence");
                String[] tagInfo = new String[2];
                tagInfo[0] = tagName;
            }
        }
    }
}

```

Das war wirklich nicht schwer.

XPages Bluemix Fusion

localhost/xpagesFusion2.nsf/classify.xsp

Suchen

XPages Bluemix Fusion

Home

Database Services

Cloudant

Watson Services

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Texteingabe:

Red onion Gruyère & rosemary fougasse

 Classify

Powered by IBM Watson

Text Classifiers

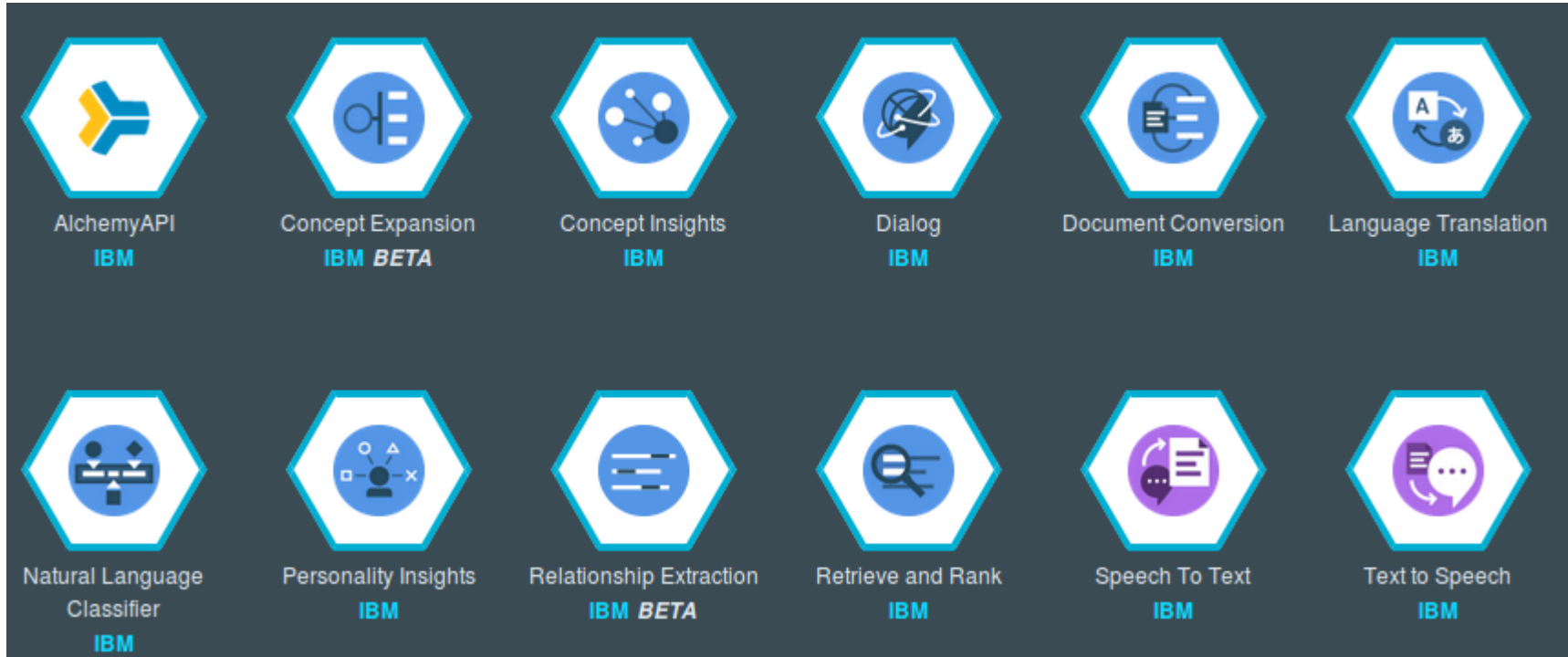
bread	92,51%
pasta	7,49%

Zusammenfassung

- Einfache Aktivierung von Watson Services aus Bluemix heraus
- Schnelle Integration in Domino Anwendungen möglich
- Was fehlt:
 - Neue Ideen für die Integration von Cognitive Computing

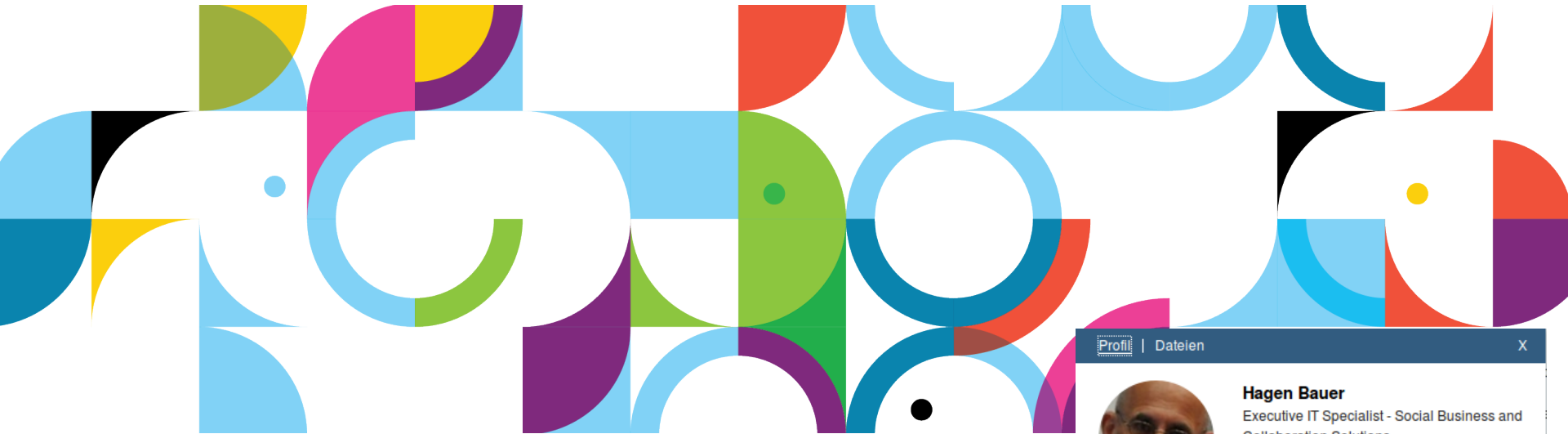
Erweitern Sie Domino Anwendungen um kognitive Elemente wie z.B.

- Natursprachliches Input
- „Menschliche“ Dialoge
- Analyse von „Stimmungen“ in Texten





Watson - bitte helfen Sie Integration von IBM Bluemix Watson Services in IBM Domino



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