

LV1871 Java Coding Dojo

# **Chatbot leichtgemacht – Sterbegeldrechner 4.0**

München, 03. Mai 2018

**Nicolai Erbs (INFOMOTION) und Erik Langenhan (IBM)**

# Agenda

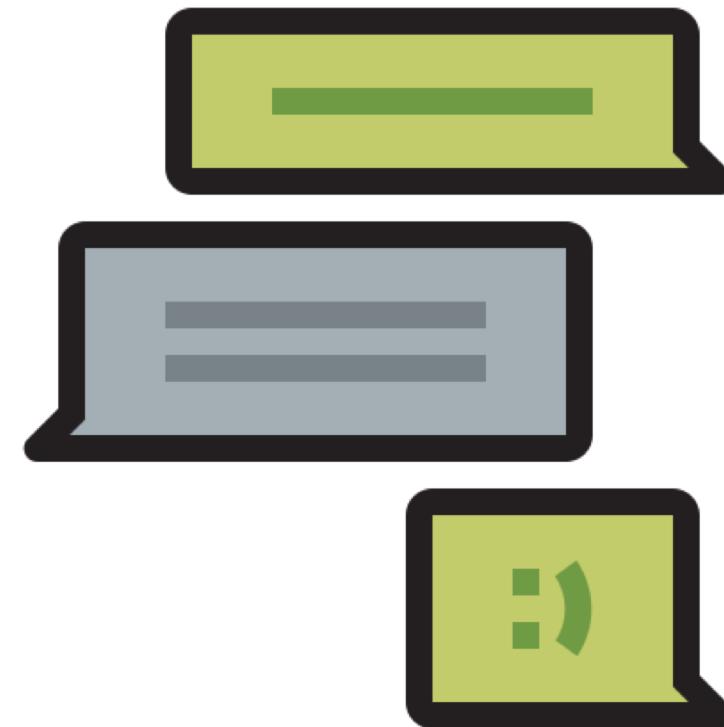
Einführung

- › INFOMOTION
- › IBM Cloud (Watson Assistant)
- › Chatbots
- › Registrierung IBM Watson
- › Chatbot mit Watson Assistant
- › Integration in ein Orchestration Layer
- › Anbindung an die LV1871 API
- › Erweiterungen
- › Wie geht es weiter?
- › Lessons Learned

Entwicklung Chatbot

Wrap-up

# Vorstellung



## INFOMOTION: Unser Erfolgsgeheimnis? We love data!

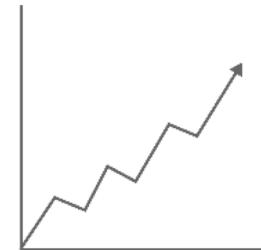
BUSINESS INTELLIGENCE, BIG DATA & DIGITAL SOLUTIONS



8 STANDORTE DACH REGION



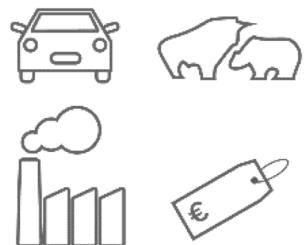
13 JAHRE WACHSTUM



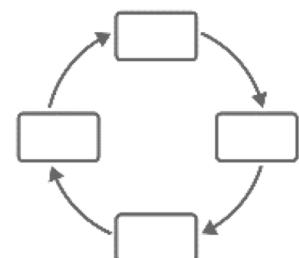
300 MITARBEITER



350+ KUNDEN ALLER BRANCHEN



FULL SERVICE-ANBIETER



INFOMOTION LAB



STARKE KOOPERATIONEN

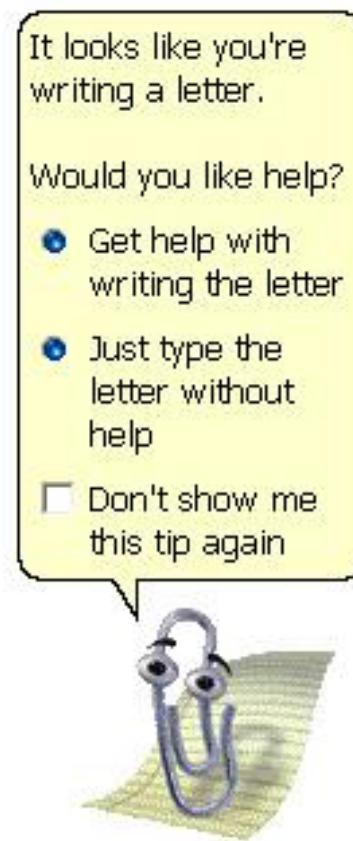


# IBM Cloud Architektur – Watson Services

 <p><b>Applications, solutions and services</b> Targeted solutions for enterprise businesses</p>	<table border="1"> <tr> <td>Watson Oncology</td><td>Watson Cyber Security</td><td>Weather</td><td>IBM Services and Industry Solutions</td><td>Watson Virtual Agent</td><td>Watson Explore and Discover</td><td>IBM Risk and Compliance</td><td>Asset Management (Maximo)</td></tr> </table>	Watson Oncology	Watson Cyber Security	Weather	IBM Services and Industry Solutions	Watson Virtual Agent	Watson Explore and Discover	IBM Risk and Compliance	Asset Management (Maximo)								
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 <p><b>AI</b> Cognitive building blocks for developers</p>	<table border="1"> <tr> <td>API Conversation</td><td>API Discovery</td><td>API Compare and Comply</td><td>API DLaaS</td><td>API Tone Analyzer</td><td>API Personal Insight</td><td></td><td></td></tr> <tr> <td>API Visual Recognition</td><td>API Speech</td><td>API Document Conversion</td><td>API Nat Language Understanding</td><td>API Nat Language Classifier</td><td>API Knowledge Query</td><td></td><td></td></tr> </table>	API Conversation	API Discovery	API Compare and Comply	API DLaaS	API Tone Analyzer	API Personal Insight			API Visual Recognition	API Speech	API Document Conversion	API Nat Language Understanding	API Nat Language Classifier	API Knowledge Query		
API Conversation	API Discovery	API Compare and Comply	API DLaaS	API Tone Analyzer	API Personal Insight												
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 <p><b>Data</b> Tools to prepare data for cognitive</p>	<table border="1"> <tr> <td>Ingestion</td><td>Storage</td><td>Analytics</td><td>Deployment</td><td>Governance</td><td></td><td></td><td></td></tr> </table>	Ingestion	Storage	Analytics	Deployment	Governance											
Ingestion	Storage	Analytics	Deployment	Governance													
 <p><b>Cloud Infrastructure</b> A highly scalable, security enabled infrastructure</p>	<table border="1"> <tr> <td colspan="2">Cloud Integration</td><td colspan="3">Cognitive Micro-services</td><td colspan="2">DevOps Tooling</td></tr> <tr> <td>Networking</td><td>Security</td><td>Core Enterprise Infrastructure</td><td>Cognitive Systems</td><td>Virtual Servers</td><td>Object Storage</td><td>File Storage</td></tr> </table>	Cloud Integration		Cognitive Micro-services			DevOps Tooling		Networking	Security	Core Enterprise Infrastructure	Cognitive Systems	Virtual Servers	Object Storage	File Storage		
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Office Hilfe der 90er

## Der Anfang von Chatbots: Karl Klammer



**It looks like you're trying to work. Would you like me to bug you instead?**

- Annoy me till my eyes bleed
- Go away please



Sprachassistenten

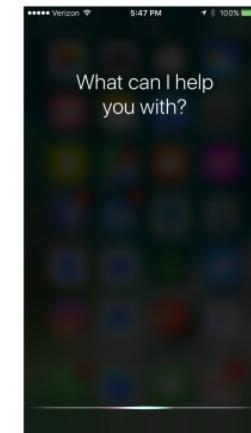
Amazon, Apple, Google, Microsoft & Co.



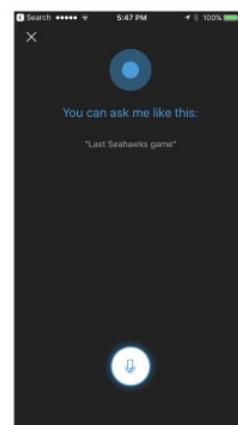
**AMAZON'S ALEXA**



**GOOGLE'S ASSISTANT**



**APPLE'S SIRI**



**MICROSOFT'S CORTANA**

## Einsatzgebiete von Chatbots

- › Beratung bei Kaufentscheidungen
- › Verarbeitung von Bestellung

### E-Commerce

### Marketing

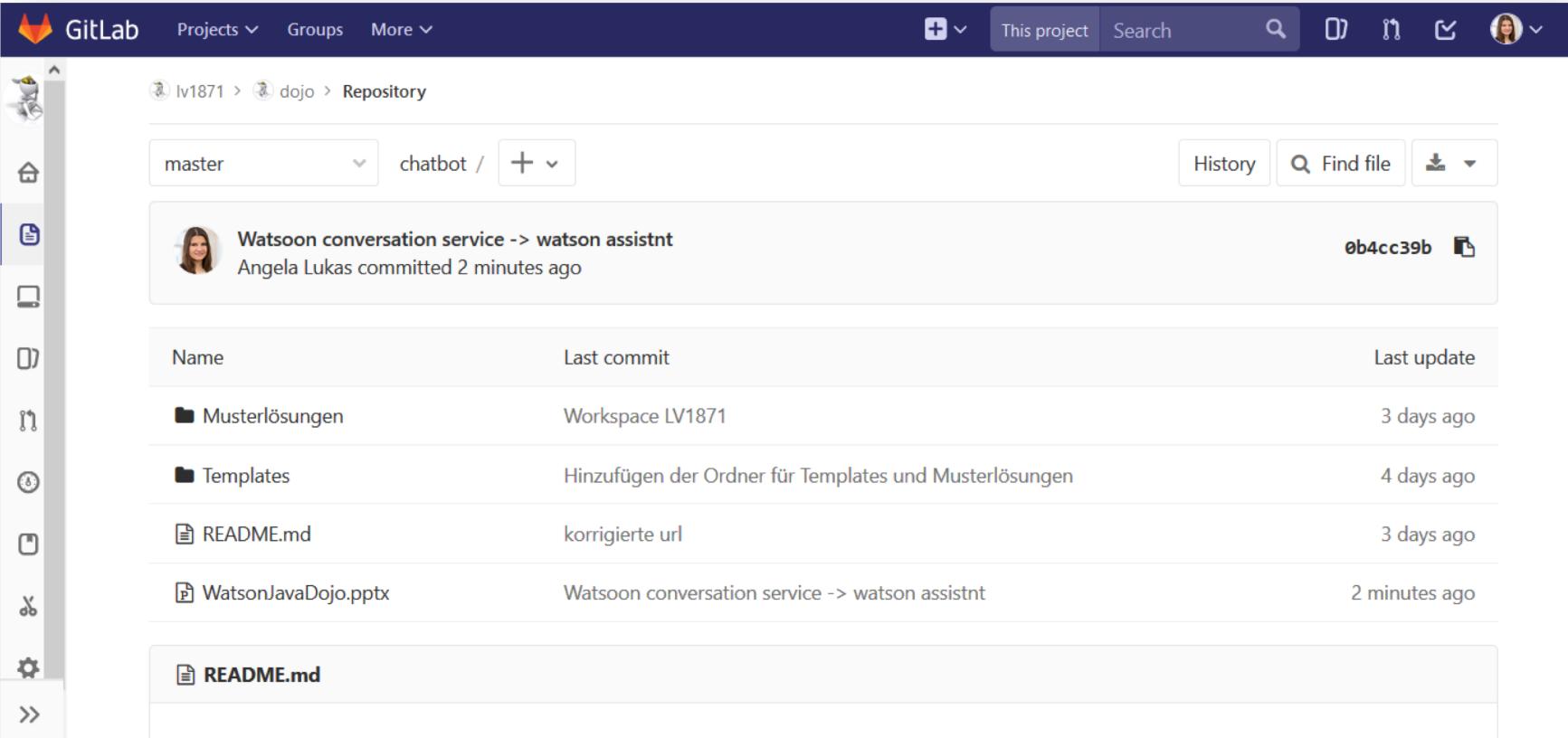
### Entscheidungs- unterstützung

### Suchwerkzeug

- › Faktenbasis abfragen
- › IT-Helpdesk für häufige Anfragen

- › Suche nach Kontaktdataen
- › Integration auf Websites

## Alle Informationen zum Nachlesen



The screenshot shows a GitLab repository interface. The top navigation bar includes links for Projects, Groups, More, a plus icon for creating new projects, This project (selected), Search, and user profile icons. The repository path lv1871 > dojo > Repository is displayed. A dropdown menu for the branch master shows options to switch to another branch or create a new one. The commit history table lists the following commits:

Name	Last commit	Last update
Musterlösungen	Workspace LV1871	3 days ago
Templates	Hinzufügen der Ordner für Templates und Musterlösungen	4 days ago
README.md	korrigierte url	3 days ago
WatsonJavaDojo.pptx	Watsoon conversation service -> watson assistnt	2 minutes ago
README.md		

<https://gitlab.infomotion.de/lv1871/chatbot>

Ziel des Dojos: Entwicklung eines vollständigen Chatbots



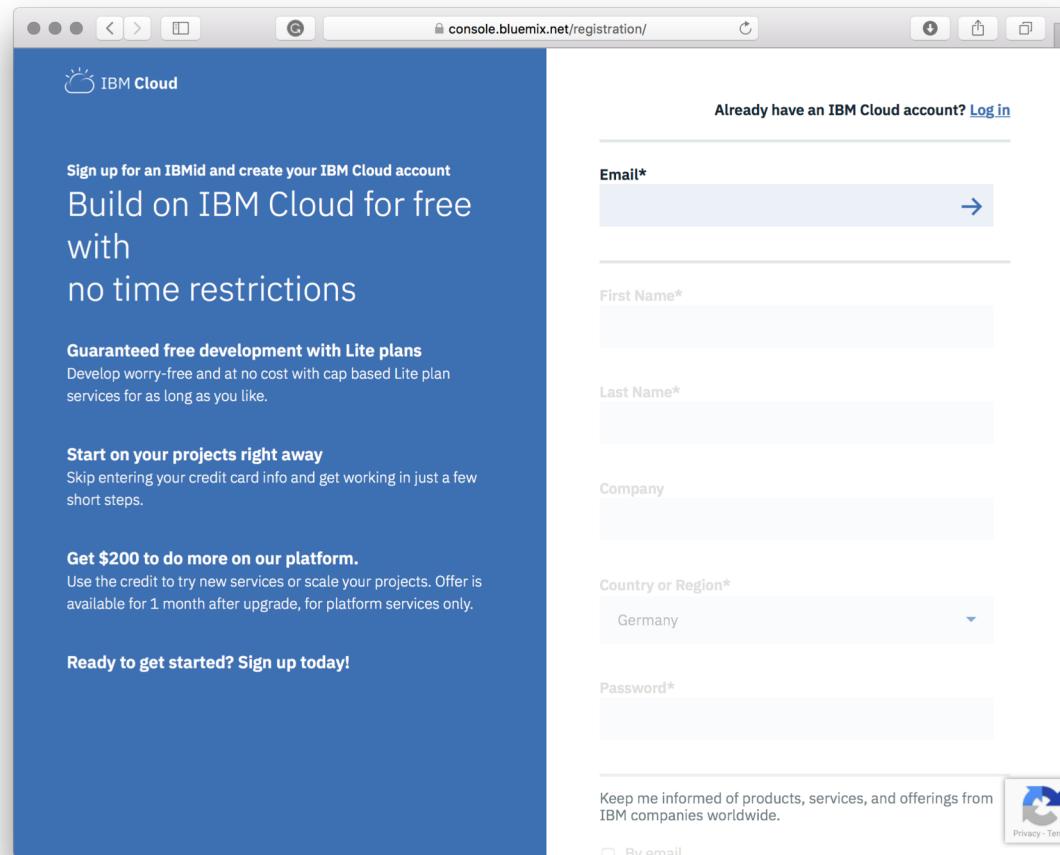
## Zeitplanung Katas

Dauer	Kata	Beschreibung
20 min	Erstelle einen Watson Assistant Dialog	<ul style="list-style-type: none"> <li>• Dialog erstellen</li> <li>• Intents &amp; Entities verbessern</li> <li>• Testen mit Try-out</li> </ul>
20 min	Verbinde Watson Assistant mit dem Orchestration Layer	<ul style="list-style-type: none"> <li>• Integration der Watson SDK</li> <li>• Anbindung an Watson Assistant</li> <li>• Übergabe von Kontextvariablen</li> </ul>
20 min	Verbinde den Sterbegeldrechner mit der API der LV 1871	<ul style="list-style-type: none"> <li>• Anbindung API LV1871</li> <li>• Berechnung des Beitrags</li> </ul>
20 min	Erweitere das System	<ul style="list-style-type: none"> <li>• Logging</li> <li>• „Chit Chat“</li> <li>• Actions</li> </ul>

# Kata 1



# IBM Cloud Registrierung I



The screenshot shows the IBM Cloud registration page at [console.bluemix.net/registration/](https://console.bluemix.net/registration/). The left side of the page has a blue background with white text, while the right side is a standard registration form.

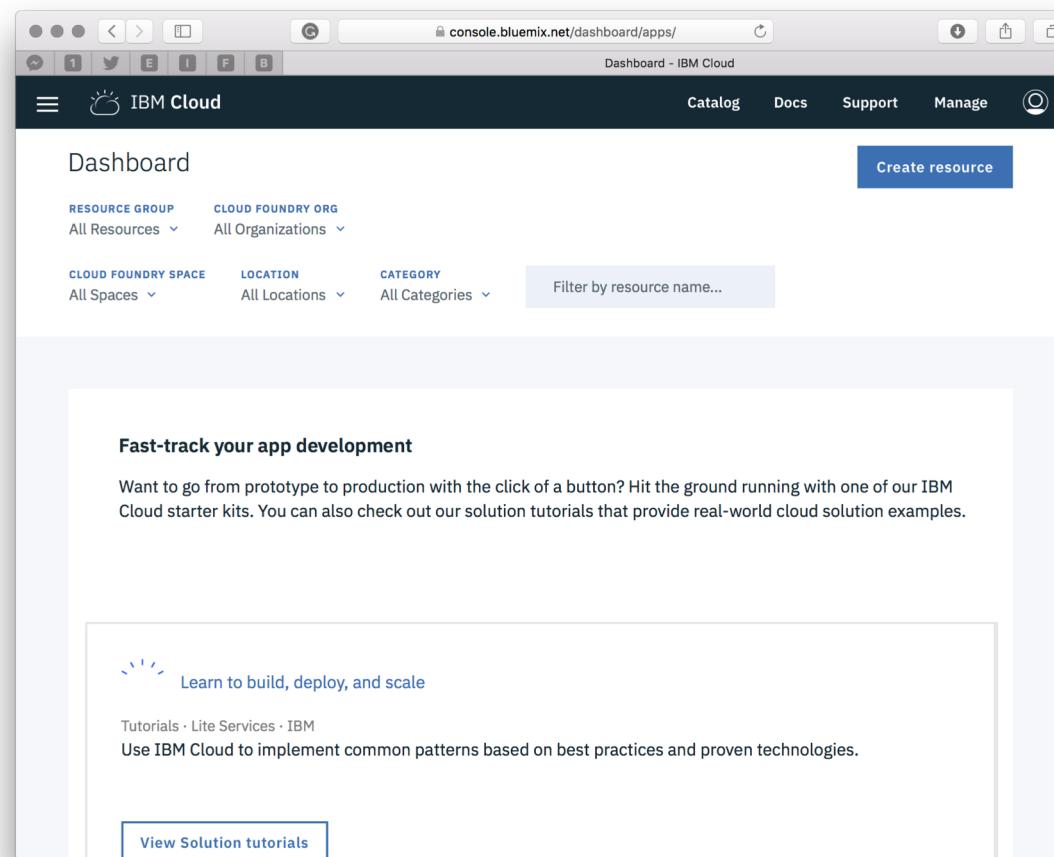
**Left Side (Blue Background):**

- IBM Cloud logo:** A small icon of a cloud with a gear inside.
- Text:** "Sign up for an IBMid and create your IBM Cloud account".
- Text:** "Build on IBM Cloud for free with no time restrictions".
- Text:** "Guaranteed free development with Lite plans".
- Text:** "Develop worry-free and at no cost with cap based Lite plan services for as long as you like."
- Text:** "Start on your projects right away".
- Text:** "Skip entering your credit card info and get working in just a few short steps."
- Text:** "Get \$200 to do more on our platform.".
- Text:** "Use the credit to try new services or scale your projects. Offer is available for 1 month after upgrade, for platform services only."
- Text:** "Ready to get started? Sign up today!".

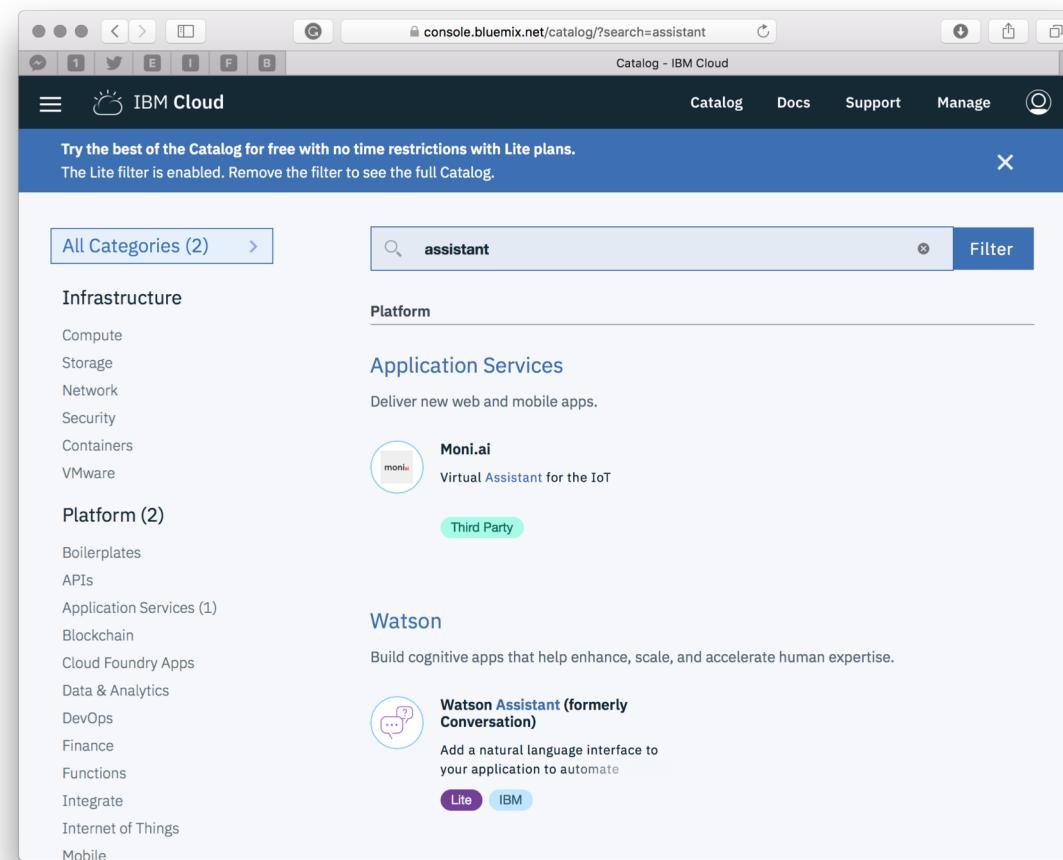
**Right Side (Form Fields):**

- Email\***: An input field with a right-pointing arrow button.
- First Name\***: An input field.
- Last Name\***: An input field.
- Company**: An input field.
- Country or Region\***: A dropdown menu set to "Germany".
- Password\***: An input field.
- Checkboxes:** "Keep me informed of products, services, and offerings from IBM companies worldwide." and "By email".
- Buttons:** A "Privacy - Terms" link and a small circular icon with a 'C'.

## IBM Cloud Registrierung II

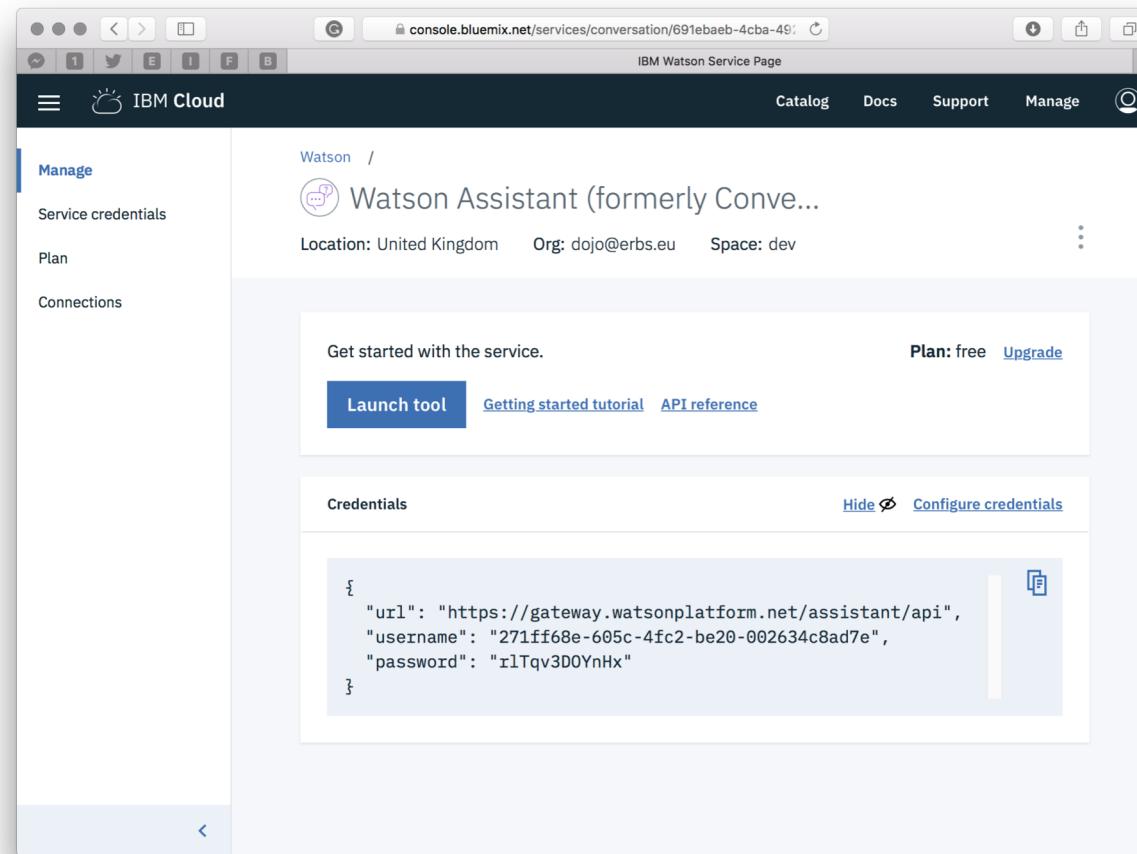


# IBM Cloud: Watson Assistant I



The screenshot shows the IBM Cloud Catalog interface. At the top, there is a banner message: "Try the best of the Catalog for free with no time restrictions with Lite plans. The Lite filter is enabled. Remove the filter to see the full Catalog." Below the banner, there is a search bar with the word "assistant" typed into it, and a "Filter" button. To the left, there is a sidebar with categories like Infrastructure (Compute, Storage, Network, Security, Containers, VMware) and Platform (2) (Boilerplates, APIs, Application Services (1), Blockchain, Cloud Foundry Apps, Data & Analytics, DevOps, Finance, Functions, Integrate, Internet of Things, Mobile). On the right, there are two main sections: "Application Services" (listing Moni.ai as a "Virtual Assistant for the IoT" from a third-party provider) and "Watson" (listing Watson Assistant (formerly Conversation) as a cognitive app for enhancing applications with natural language interfaces. It includes a "Lite" and "IBM" button).

# IBM Cloud: Watson Assistant II



The screenshot shows the IBM Watson Assistant service page within the IBM Cloud console. The URL in the browser is `console.bluemix.net/services/conversation/691ebaeb-4cba-49...`. The page title is "Watson / Watson Assistant (formerly Conve...)".

On the left, there is a sidebar with the following options:

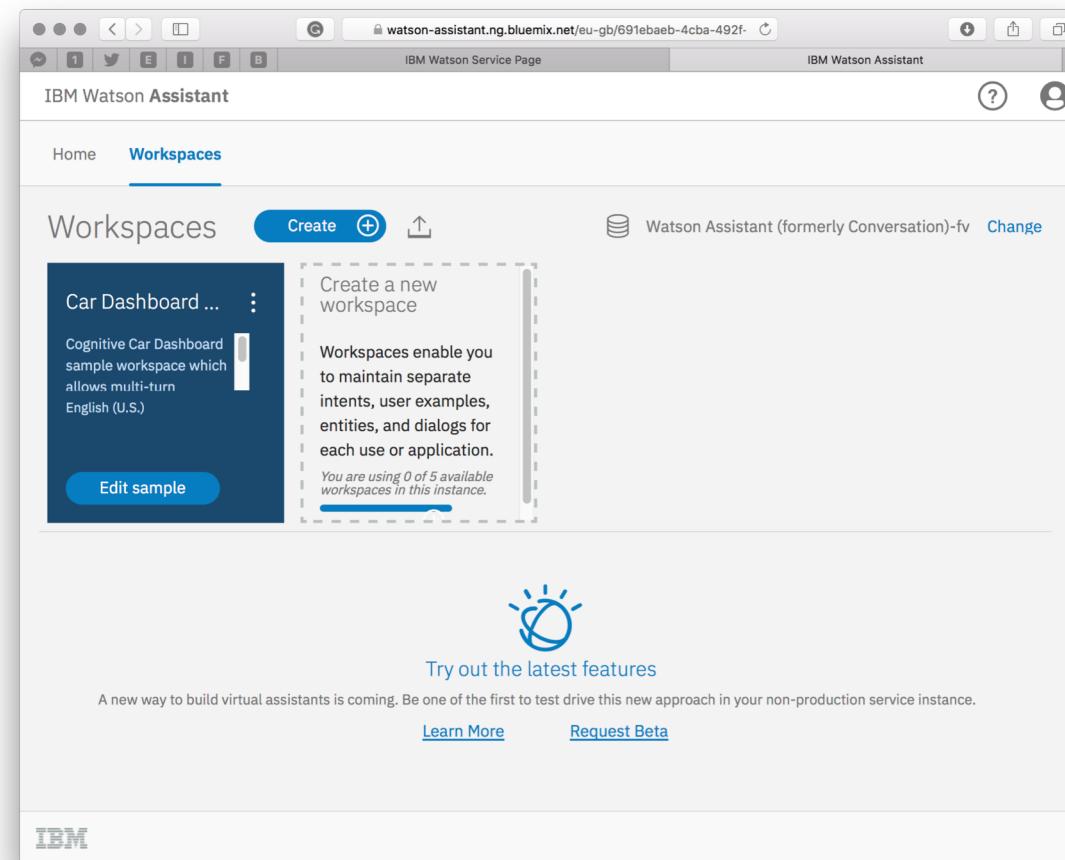
- Manage (selected)
- Service credentials
- Plan
- Connections

The main content area displays the following information:

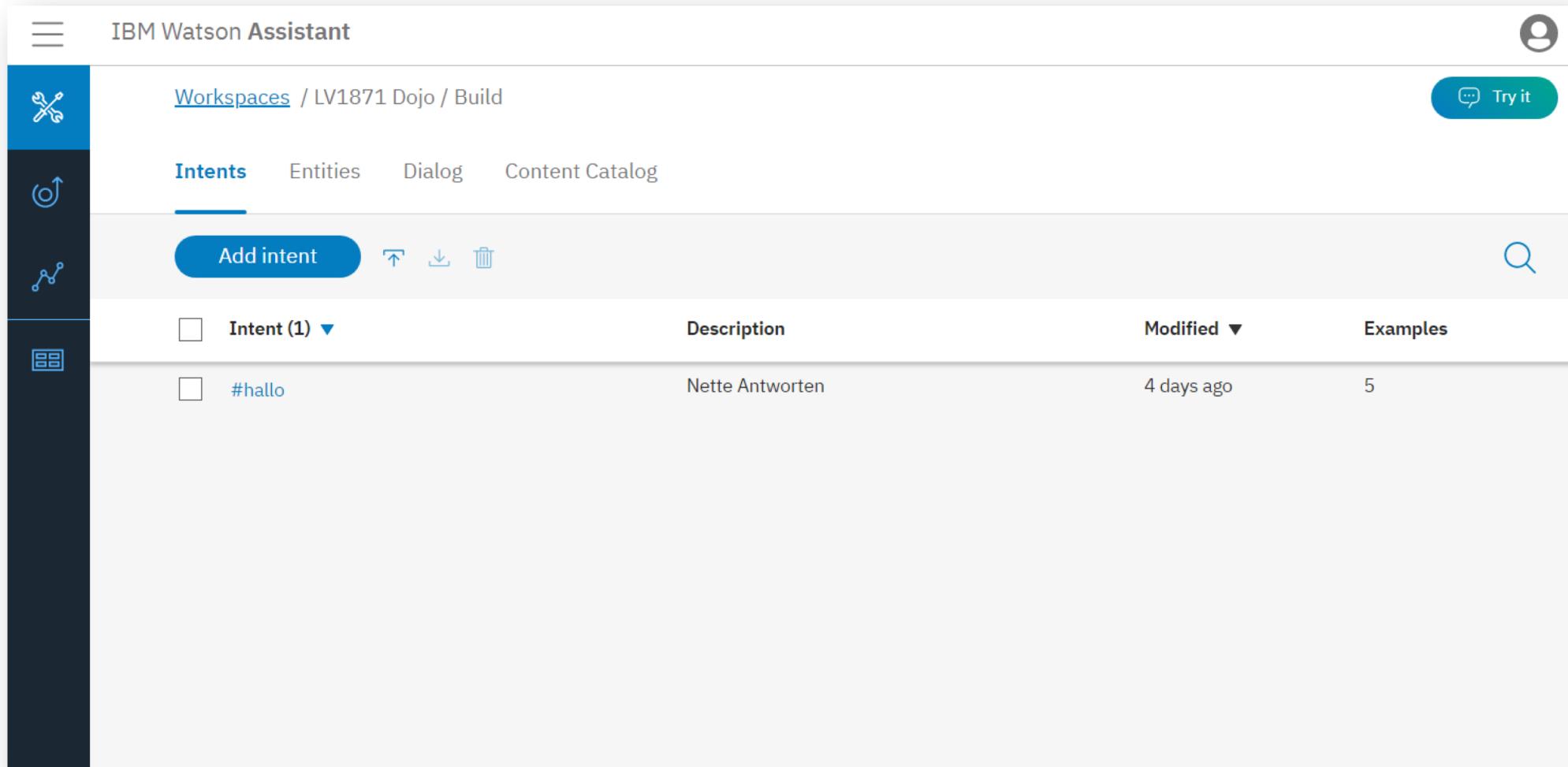
- A message: "Get started with the service."
- A plan indicator: "Plan: free [Upgrade](#)"
- A "Launch tool" button and links to "Getting started tutorial" and "API reference".
- A "Credentials" section showing the following JSON configuration:

```
{  
  "url": "https://gateway.watsonplatform.net/assistant/api",  
  "username": "271ff68e-605c-4fc2-be20-002634c8ad7e",  
  "password": "rlTqv3D0YnHx"  
}
```

## IBM Cloud: Watson Assistant III



# Kurzeinführung Watson Assistant



The screenshot shows the IBM Watson Assistant interface. The top navigation bar includes a menu icon, the title "IBM Watson Assistant", a user profile icon, and a "Try it" button. Below the title, the current workspace is shown as "Workspaces / LV1871 Dojo / Build". The main navigation tabs are "Intents", "Entities", "Dialog", and "Content Catalog", with "Intents" being the active tab. A prominent blue button labeled "Add intent" is located in the center of the screen. To its right are sorting icons for "Description", "Modified", and "Examples", and a search icon. A table below lists the intents. The first intent is named "#hallo" and has a description of "Nette Antworten", was modified 4 days ago, and has 5 examples.

#	Intent	Description	Modified	Examples
1	#hallo	Nette Antworten	4 days ago	5

## Kata 1: Watson Assistant

### PROBLEMBeschreibung

- › Erstelle einen Workspace oder importiere das Template
- › Erstelle einen einfachen Dialog
- › Erweitere Intents und Entities

### ANWENDUNGSFÄLLE

- › Nutzer wird nach der Summe für Sterbegeld gefragt
- › Eingegebene Summe wird erkannt und im Kontext gespeichert

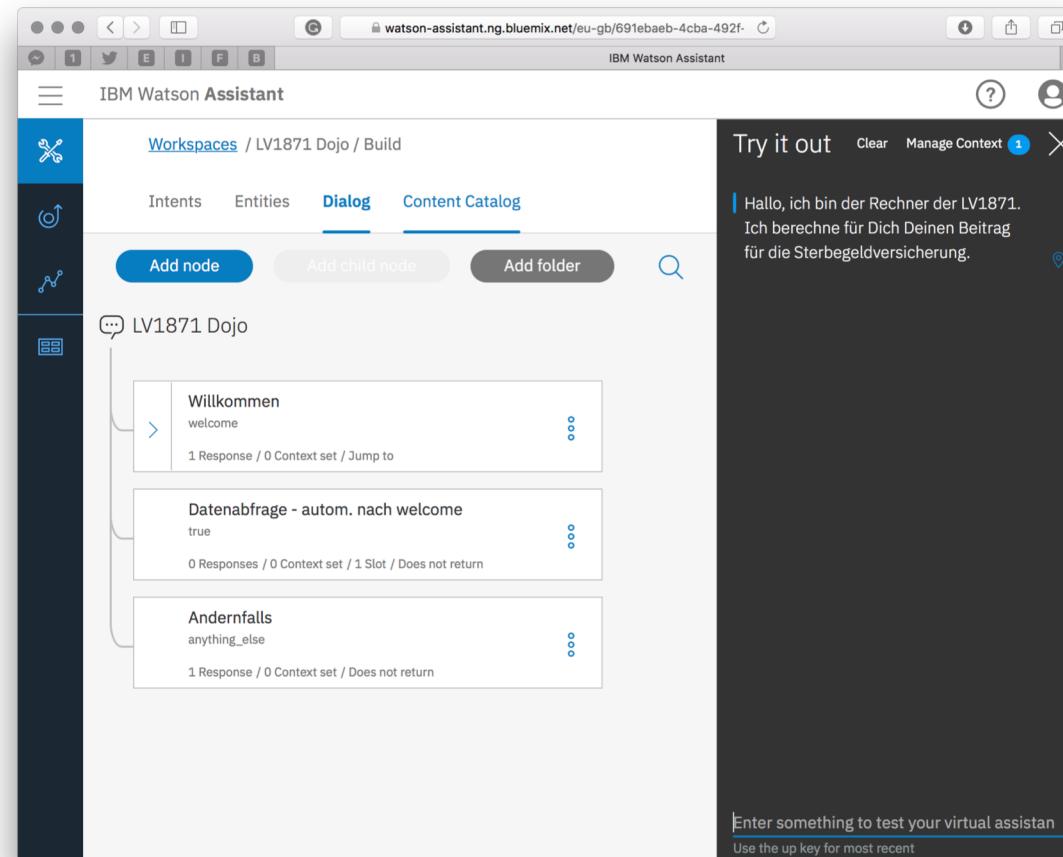
### HINWEISE

- › Intents sind die Verben des Chatbots
- › Entities sind die Substantive des Chatbots

### RESSOURCEN

- › Template:  
[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/dojo\\_template.json](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/dojo_template.json)
- › <https://gitlab.infomotion.de/lv1871/chatbot/master/www.ibm.com/watson/how-to-build-a-chatbot>

## Kata 1: Watson Assistant



Komplette Lösung:

[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Musterlösungen/dojo\\_solution.json](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Musterlösungen/dojo_solution.json)

## Kata 2



## Kata 2: Orchestration Layer

### PROBLEMBeschreibung

- › Importiere die Musterlösung des Chatbots in WA
- › Importiere das Template des Orchestration Layers
- › Füge Workshop-ID ein
- › Nutze Konsole als User Interface zu WA

### HINWEISE

- › Verifiziere die Installation mit JUnit Test Cases
- › Erweitere den JUnit Testfall für WA

### ANWENDUNGSFALL

- › Nutzer kann über die Konsole mit WA kommunizieren

### RESSOURCEN

- › Template:  
[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java\\_template.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java_template.zip)
- › <https://gitlab.infomotion.de/lv1871/chatbot/master/github.com/watson-developer-cloud/java-sdk>

## Kata 2: Orchestration Layer

```
May 01, 2018 1:15:38 PM okhttp3.internal.platform.Platform log
INFO: --> POST https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 http/1.1 (21-byte body)
May 01, 2018 1:15:39 PM okhttp3.internal.platform.Platform log
INFO: <-- 200 OK https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 (323ms, 456-byte body)
Bot: Hallo, ich bin der Rechner der LV1871. Ich berechne für Dich Deinen Beitrag für die Sterbegeldversicherung.
Bot: Um eine Berechnung vorzunehmen benötige ich folgende Informationen von dir: Mit wie viel Sterbegeld möchtest du planen? Und ab wann möchtest du abgesichert sein?

User: Ich brauche 1000€
May 01, 2018 1:15:51 PM okhttp3.internal.platform.Platform log
INFO: --> POST https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 http/1.1 (327-byte body)
May 01, 2018 1:15:52 PM okhttp3.internal.platform.Platform log
INFO: <-- 200 OK https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 (782ms, 474-byte body)
Bot: Ab wann möchtest du abgesichert sein?

User: Ich möchte ab sofort abgesichert sein.
May 01, 2018 1:16:01 PM okhttp3.internal.platform.Platform log
INFO: --> POST https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 http/1.1 (367-byte body)
May 01, 2018 1:16:02 PM okhttp3.internal.platform.Platform log
INFO: <-- 200 OK https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 (444ms, 539-byte body)
Bot: Zu guter Letzt brauche ich noch dein Geburtsdatum. Du musst zwischen 40 und 99 Jahre alt sein.

User: Ich habe am 24.11.1974 Geburtstag
May 01, 2018 1:16:12 PM okhttp3.internal.platform.Platform log
INFO: --> POST https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 http/1.1 (386-byte body)
May 01, 2018 1:16:12 PM okhttp3.internal.platform.Platform log
INFO: <-- 200 OK https://gateway.watsonplatform.net/assistant/api/v1/workspaces/5366459e-87b5-46b7-80a9-5e29a9749274/message?version=2018-02-16 (699ms, 643-byte body)
```

Komplette Lösung:

[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java\\_context.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java_context.zip)

## Kata 3



## Kata 3: LV 1871 API

### PROBLEMBeschreibung

- › Die Summe für das Sterbegeld wird aus dem Kontext ausgelesen
- › Der monatliche Beitrag für die Sterbegeldversicherung wird berechnet

### HINWEISE

- › Grenze die minimale und maximale Höhe des Wertes ein
- › Nutze JUnit-Tests

### ANWENDUNSFALL

- › Bei Eingabe der Sterbegeldsumme, Startdatum und Geburtsdatum wird der monatliche Beitrag ausgegeben

### RESSOURCEN

- › [www.lv1871.de/lv1871\\_internet/sterbegeldversicherung.htm#/?versicherungssumme=9000](http://www.lv1871.de/lv1871_internet/sterbegeldversicherung.htm#/?versicherungssumme=9000)
- › Template:  
[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java\\_context.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java_context.zip)

## Kata 3: LV 1871 API

```
public class ApiConnectorTest {  
  
    private ApiConnector api;  
  
    @Before  
    public void setUp() throws Exception {  
        api = new ApiConnector();  
    }  
  
    @Test  
    public void test() {  
        double rate = api.calculateRate(10000, "1974-11-24", "2018-04-24");  
        Assert.assertEquals(34.45, rate, 0.0001);  
    }  
}
```



Komplette Lösung:  
[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java\\_lv1871api.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java_lv1871api.zip)

## Kata 4



## Kata 4: Erweiterungen

### PROBLEMBeschreibung

- › Bringe dem Chatbot Chit Chat bei
- › Logge Ein- und Ausgaben
- › Füge eine UI hinzu
- › Erstelle einen Backup des Workspace
- › Berechne und übergebe den monatlichen Beitrag mittels actions

### HINWEISE

- › Es darf keinen einzelnen Intent mit allen Chit Chats geben (Dominanz eines Intents)

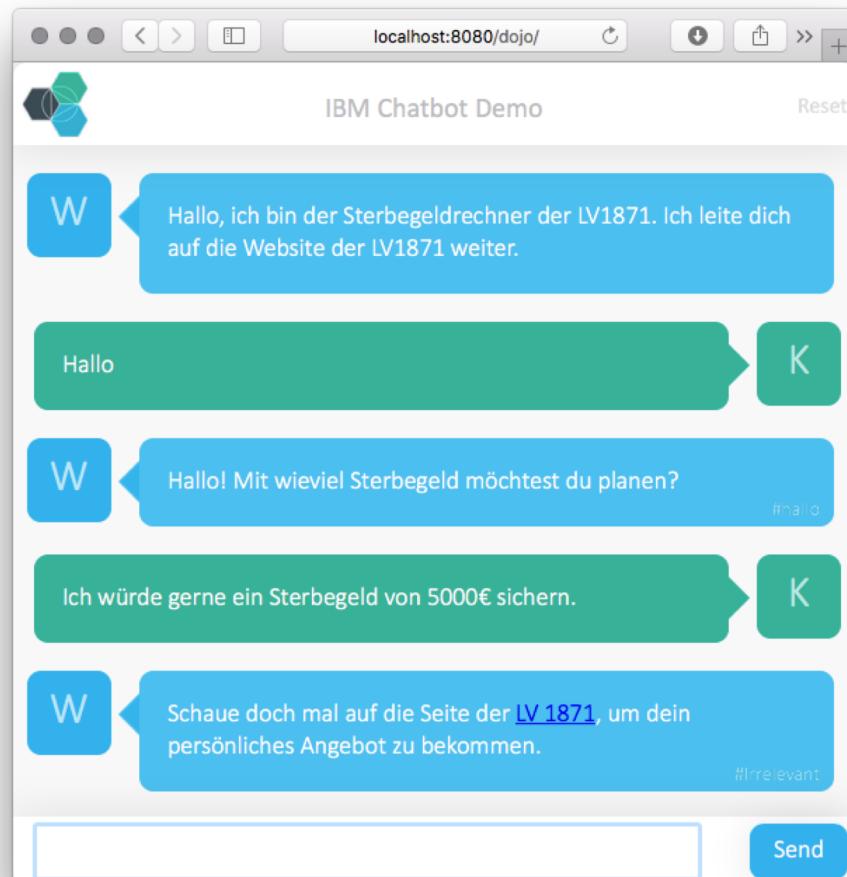
### ANWENDUNGSFÄLLE

- › Der Monatsbetrag wird direkt an Assistant übergeben
- › Chatbot beantwortet eine Frage zum Wetter
- › Nutzer chattet über eine UI
- › Administrator kann den Chatverlauf in der Datenbank nachverfolgen

### RESSOURCEN

- › Template:  
[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java\\_lv1871api.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Templates/java_lv1871api.zip)
- › GUI: <https://git.ng.bluemix.net/insdach/chatbot-template>

## Kata 4: Erweiterungen



Komplette Lösung:

[https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Musterlösungen/java\\_actions.zip](https://gitlab.infomotion.de/lv1871/chatbot/blob/master/Musterlösungen/java_actions.zip)

## Wrap-up



## Erweiterungen

### Chatbot

- › Weitere Parameter abfragen
- › Weitere Versicherungen anbieten und danach fragen
- › ...

### Orchestration Layer

- › Anbindung von weiteren Einstellungen des Online-Rechner
- › Feedback auf Basis von Kundenprofilen
- › ...

### Sonstiges

- › Integration in WhatsApp und andere Messenger
- › ...

## Lessons Learned

- › Architektur eines Chatbots
- › Watson Assistant als erweiterbare Lösung
- › Anbindung an einen Orchestration Layer
- › ...

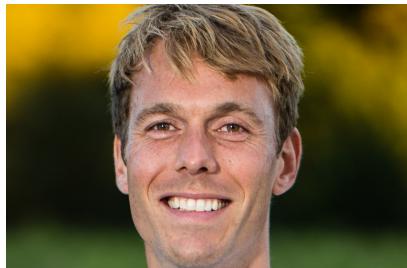


# NOT SURE IF HUMAN



# OR A VERY CLEVER CHATBOT

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