

# TRAINING YOUR AI BOT USING DITA

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# AGENDA

- The changing technology landscape
- Move from apps to bots
- New interfaces
- Types of bots
- Search vs AI bot
- How do I set up my own bot
- How do I train my new bot
- Live examples – try training your own AI!
- Source code for trying it out

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## THE CHANGING TECHNOLOGY LANDSCAPE



20 percent of all user interactions with the smartphone will take place via virtual personal assistants by 2019



In 2016, 37 percent of respondents (average across U.S. and U.K.) used a VPA at least one or more times a day.



By 2025, 14.4 million US workers will wear smart glasses.



Need to move away from “broadcast style of publications” to “conversational”

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## TOUCH VS. NEW INTERFACES

By 2020

- 2 billion zero touch devices
- 7 billion personal devices
- 1.3 billion wearables
- 5.7 billion IoT endpoints

# FROM APPS TO BOTS

- “AI, machine learning and VPAs will be the major strategic battlegrounds from 2017, and make many mobile apps fade and become subservient of VPAs.”

*Gartner*

# TYPES OF BOTS

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**RULE-BASED  
BOTS**

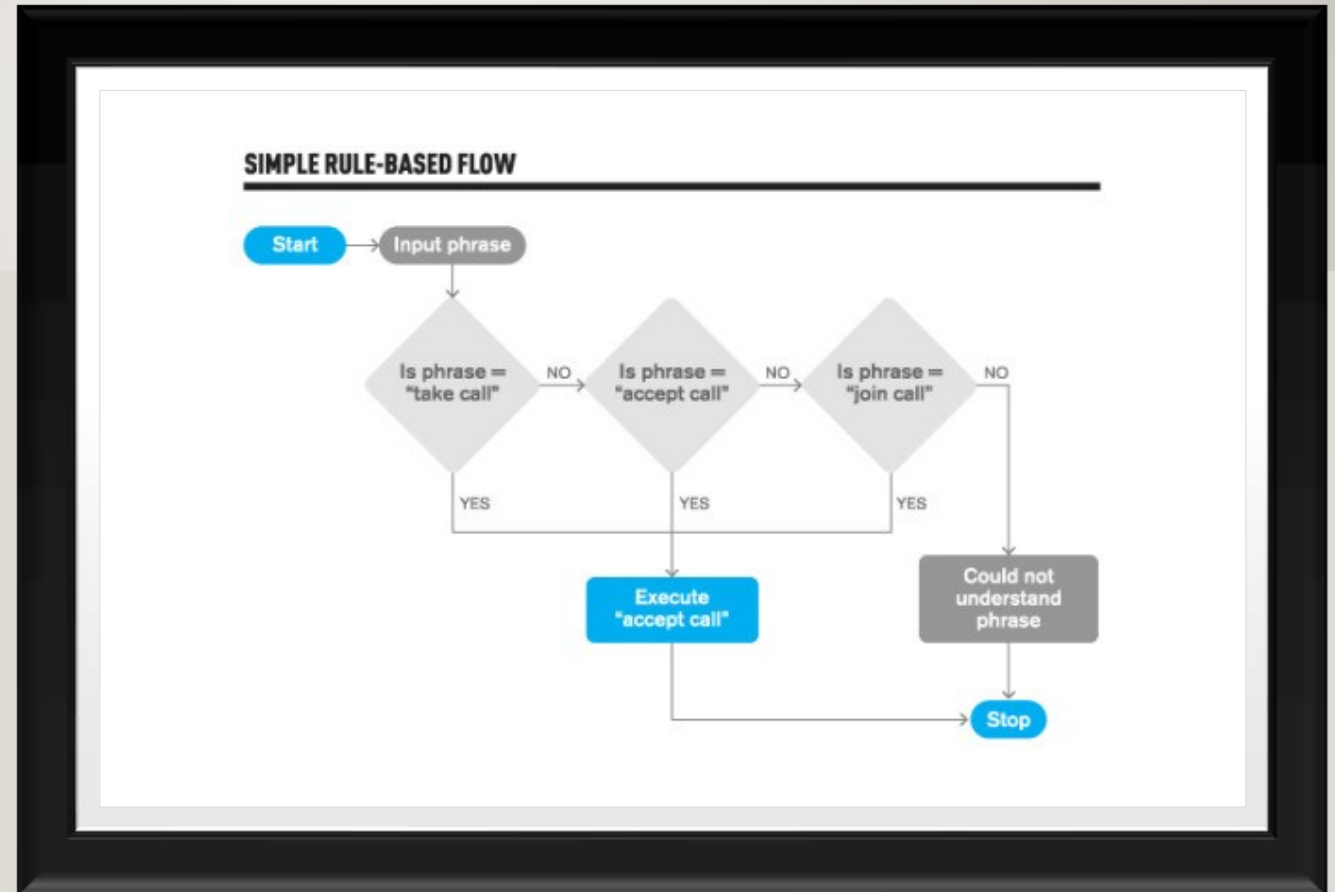


**RETRIEVABLE  
MODELS**



**GENERATIVE  
MODELS**

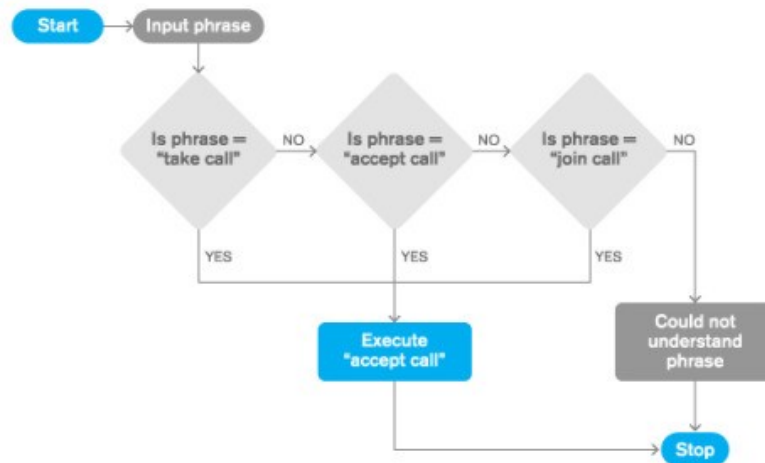
# RULE BASED



# RULE BASED

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## SIMPLE RULE-BASED FLOW



Amy, Can you **take call**? I'm driving

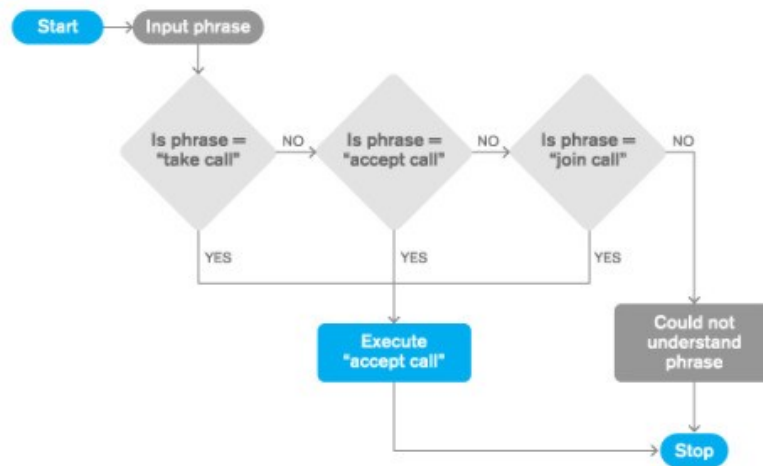
Sure!



# RULE BASED

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## SIMPLE RULE-BASED FLOW

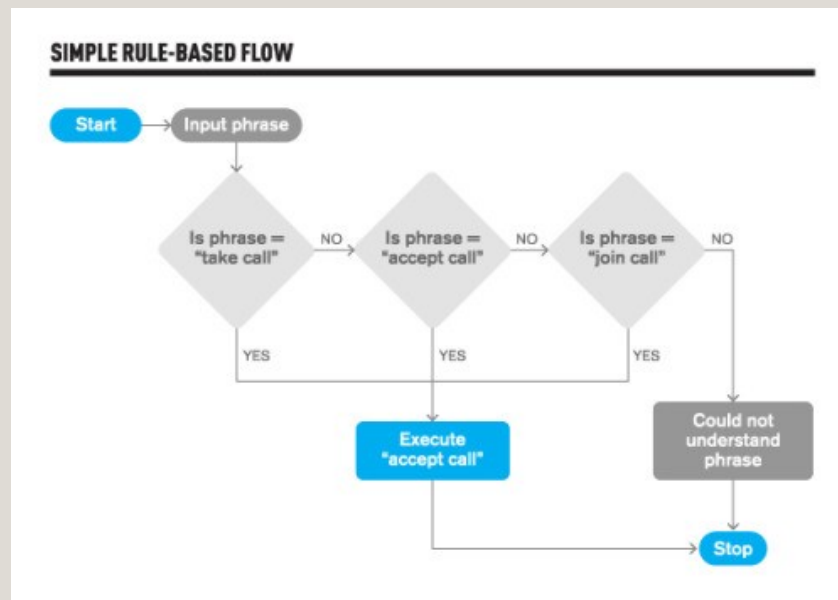


Amy I'm busy. Can you  
accept call

Sure!

# RULE BASED

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Amy, connect me to the meeting

Could not understand phrase.  
Please repeat

# SELF LEARN-ABLE BOTS

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**GENERATIVE  
MODELS**



**RETRIEVAL  
BASED MODELS**

# RETRIEVAL BASED MODELS

- IBM Watson
- Google Assistant
- Google Smart Reply

# HOW DO I SET UP MY OWN BOT?

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SEARCH VS AN AI  
BOT



AI INSTANCES



AI CONVERSATION  
INSTANCE



BUILDING AN AI  
SCHEMA WITH  
YOUR DITA FILES

# SEARCH VS AI BOT

"William Wilkinson's 'An account of the Principalities of Wallachia and Moldavia' had 'inspired this author's most famous Novel.'"

SEARCH

VS

AI BOT



Multiple answers vs Answers with a **confidence level**



Generates a hypothesis with the existing content and evaluates it

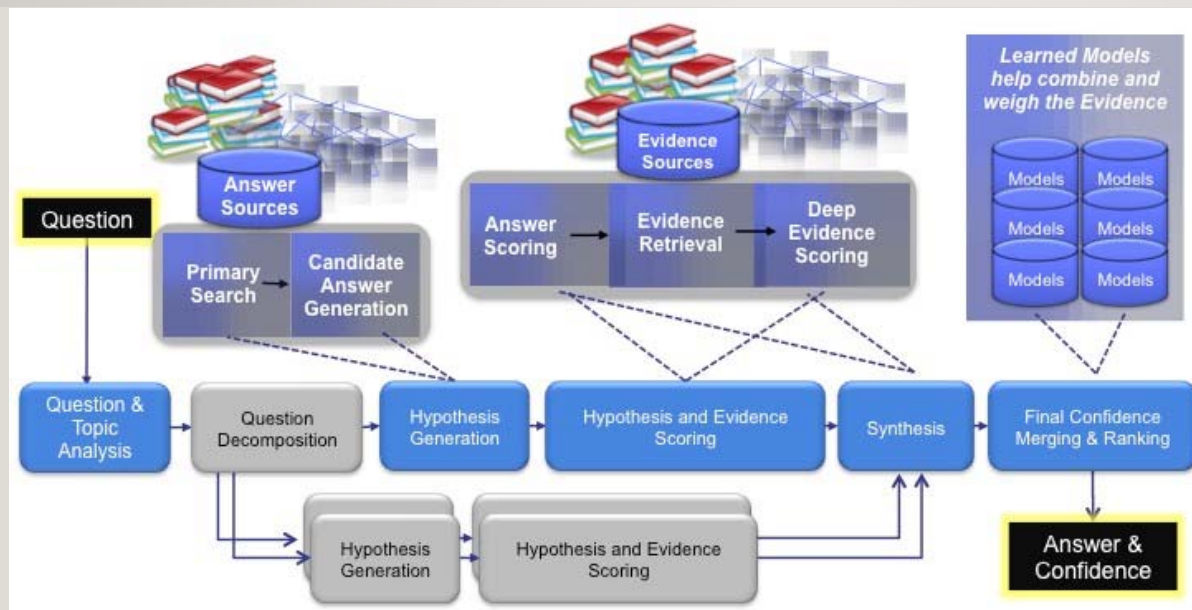


The **confidence level** of the Bot increases with the corpus that you add to it



Precision builds up over multiple trainings

# AI INSTANCES





# AI INSTANCES: CLOSED BOXES

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# AI INSTANCES: CLOSED BOXES

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# AI INSTANCES: OPEN KITCHENS

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<https://homes.nine.com.au/2015/10/22/21/56/create-the-ultimate-kitchen>



# AI INSTANCES: OPEN KITCHENS

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<https://homes.nine.com.au/2015/10/22/21/56/create-the-ultimate-kitchen> and <http://onedaycart.com/odcb/scrambled-egg-with-bread.html>

# AI INSTANCES

IBM Cloud

Catalog Docs Support Manage

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.

All Categories (45)

Infrastructure (2)

Compute

Storage (1)

Network

Security

Containers (1)

VMware

Platform (43)

Boilerplates (5)

APIs (1)

Application Services

Blockchain

Cloud Foundry Apps (10)

Data & Analytics (8)

DevOps (4)

Finance

Functions

Integrate (2)

Internet of Things (1)

Mobile (2)

Security (1)

Watson (9)

label:lite

Filter

Build cognitive apps that help enhance, scale, and accelerate human expertise.

Conversation

Add a natural language interface to your application to automate interactions with your end users. [Compare](#)

Lite IBM

Discovery

Add a cognitive search and content analytics engine to applications.

Lite IBM

Language Translator

Translate text from one language to another for specific domains.

Lite IBM

Natural Language Understanding

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment, and more.

Lite IBM

Personality Insights

The Watson Personality Insights derives insights from transactional and social media data to identify personality traits.

Lite IBM

Speech to Text

Low-latency, streaming transcription

Lite IBM

Text to Speech

Synthesizes natural-sounding speech from text.

Lite IBM

Tone Analyzer

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, social media, and customer service.

Lite IBM

Visual Recognition

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. [Choose a model](#)

Lite IBM

# HOW DO I TRAIN MY NEW BOT?

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- Intent
- Entity
- Dialog

# HOW DO I TRAIN MY NEW BOT?

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- Intent: A purpose or goal expressed by customer input to a Chabot.
- Entity: A term or object in a user's input that provides clarification or specific context for a particular intent. An entity defines a class of objects, with specific values representing possible objects in that class.
- Dialog: The dialog uses the intents and entities that are identified in the user's input, plus context from the application, to interact with the user and ultimately provide a useful response.

# IDENTIFYING THE INTENTS AND ENTITIES

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- Switch on the headlamps
- Turn on the radio
- How can install Liberty?
- How do I configure a Workload Manager?
- How do I resolve Error 56623?
- How do I troubleshoot installation issues?



# IDENTIFYING THE INTENTS AND ENTITIES

---

- Switch on the headlamps
- Turn on the radio
- How can I install Liberty?
- How do I configure a Workload Manager?
- How do I resolve Error 56623?
- How do I troubleshoot installation issues?

# CREATING YOUR FIRST INTENTS AND ENTITIES

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# CREATING A DIALOG NODE

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How do I configure a workload manager?

# CREATING A DIALOG NODE

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How do I configure a workload manager?

Run the wlm command at the prompt

# CREATING A DIALOG NODE

---

How do I troubleshoot installation  
issues?

# CREATING A DIALOG NODE

---

How do I troubleshoot installation issues?

On which platform are you on?

# CREATING A DIALOG NODE

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How do I troubleshoot installation issues?

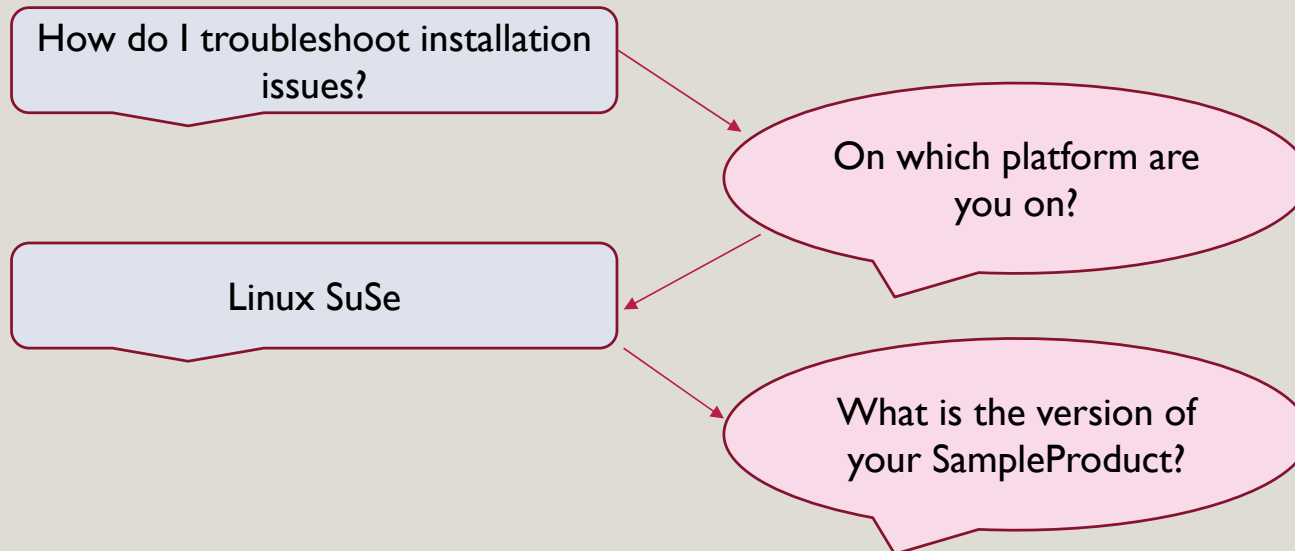
On which platform are you on?

Linux SuSe



# CREATING A DIALOG NODE

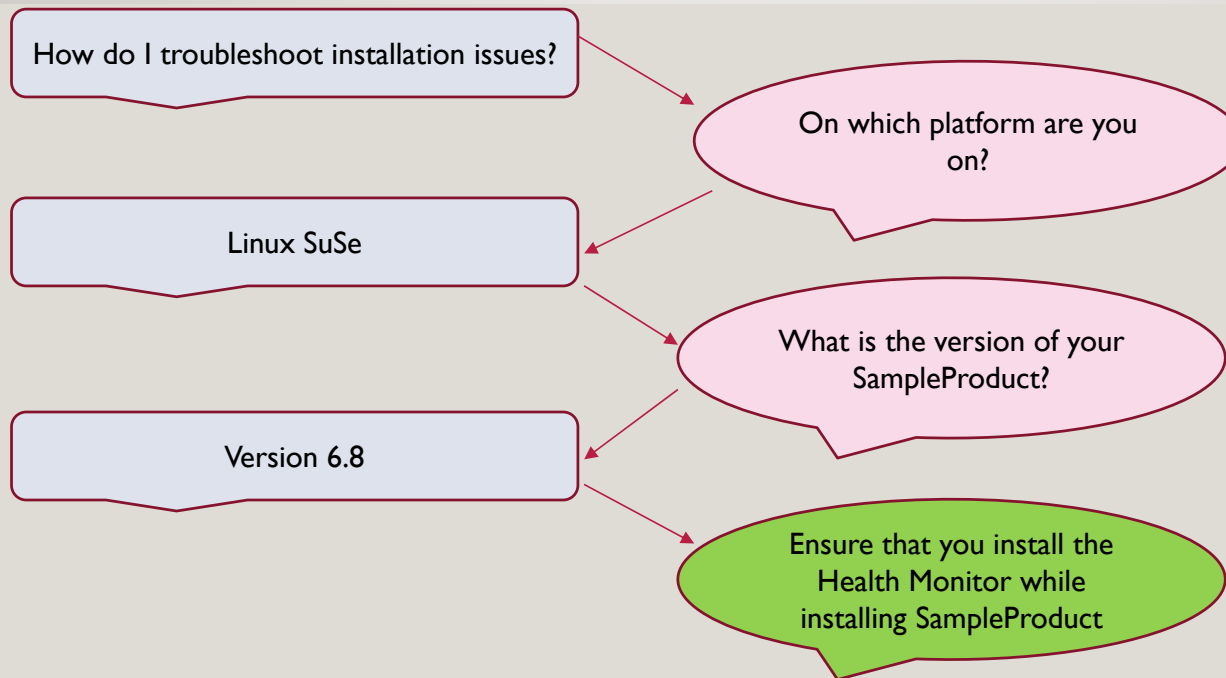
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# CREATING A DIALOG NODE

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# LEVERAGING DITA

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- Based on XML
- Inherent semantics
- Rich in syntax, conditions and filters
- Developer friendly source
- Can use scripts to migrate
- Interesting learning

DITA documentation source



Conversation bot

# BUILDING UP THE AI ENGINE FROM DITA FILES

The screenshot shows a DITA editor window with two tabs: `t_inst_tx_gui.dita` and `common-symbols.dita`. The active tab is `t_inst_tx_gui.dita`, which displays a DITA document structure. The document has a `task` element with a `taskbody` and a `context` element. The `taskbody` contains a `p` element with a `comment` and a `title` element. The `title` element is `Installing` and has a `keyword` attribute with the value `common-symbols.dita#common-symbols/ccwas`. The `comment` element is `Arbortext, Inc., 1988-2011, v.4002`. The `context` element is `Prolog information` and has a `prolog` attribute with the value `common-symbols.dita#common-symbols/admincon`. The `taskbody` also contains a `ol` element with two `li` elements. The first `li` is `1. Ensure that you are logged into your workstation with super user (root) privileges.` and the second `li` is `2. Start the Product Setup program, filepath SampleProduct-platform.bin filepath, where platform is the name of your platform. For example, execute filepath SampleProduct-AIX.bin filepath to install on the AIX platform. A dialog box listing the different locales is displayed.`. The `ol` element has a `note` attribute with the value `Note`. The `note` element is `The listing of the locales in the dialog box depends on the locale that has been set on the target system. All the supported languages are categorized into the following groups:`.

task taskbody context p

#comment Arbortext, Inc., 1988-2011, v.4002 #comment

task id="cleancies" xml:lang="en-us" title Installing keyword conref="common-symbols.dita#common-symbols/ccwas" using the

keyword conref="common-symbols.dita#common-symbols/admincon" Installation Manager keyword title

shortdesc You can install the keyword conref="common-symbols.dita#common-symbols/ccwas" SampleProduct keyword version 2.0 using the keyword conref="common-symbols.dita#common-symbols/admincon" Installation Manager keyword. Alternatively, installation can also be completed using the keyword conref="common-symbols.dita#common-symbols/cli" Command Line Interface keyword or the Silent method. shortdesc

prolog Prolog information prolog

taskbody context About this task

p To use the keyword conref="common-symbols.dita#common-symbols/admincon" Installation Manager keyword to install keyword conref="common-symbols.dita#common-symbols/ccwas" SampleProduct keyword:

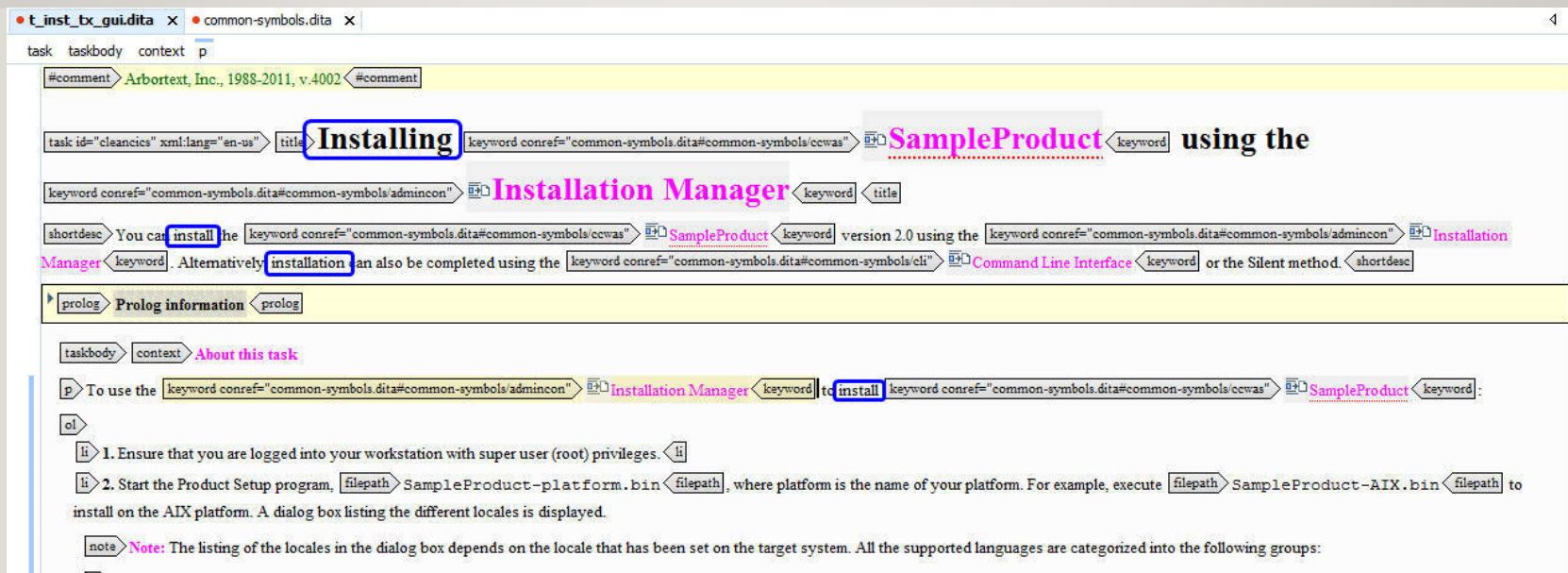
ol

li 1. Ensure that you are logged into your workstation with super user (root) privileges. li

li 2. Start the Product Setup program, filepath SampleProduct-platform.bin filepath, where platform is the name of your platform. For example, execute filepath SampleProduct-AIX.bin filepath to install on the AIX platform. A dialog box listing the different locales is displayed.

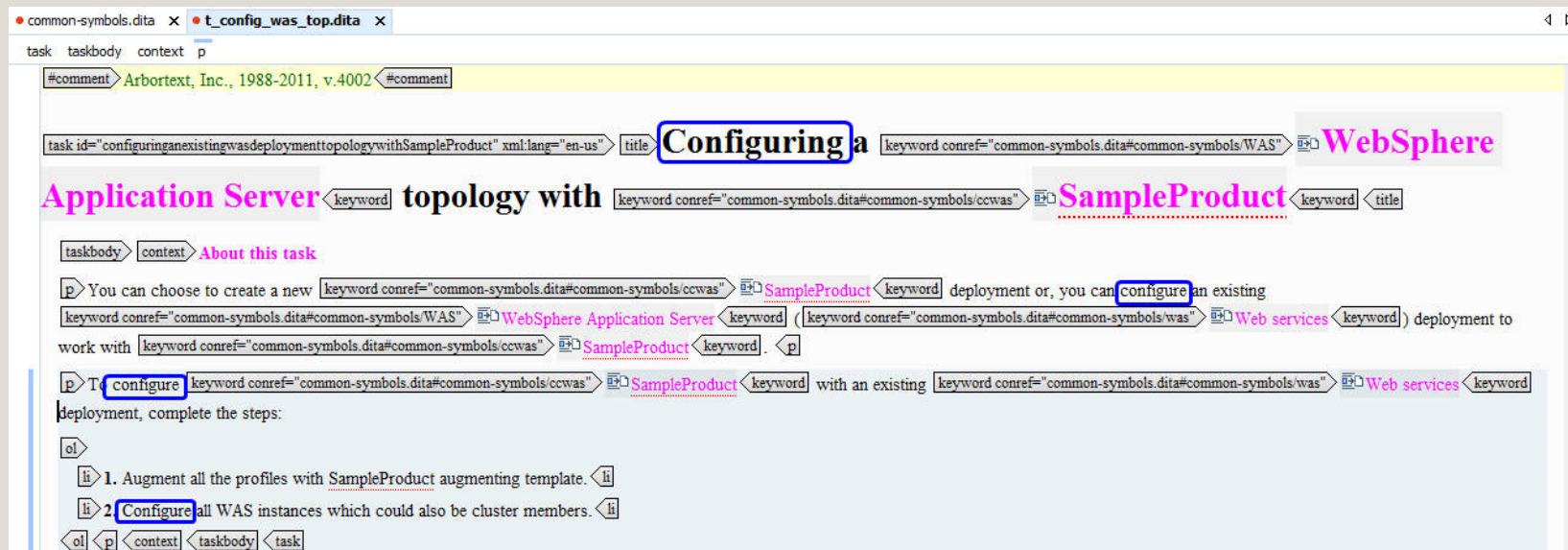
note Note: The listing of the locales in the dialog box depends on the locale that has been set on the target system. All the supported languages are categorized into the following groups:

# BUILDING UP THE AI ENGINE FROM DITA FILES





# BUILDING UP THE AI ENGINE FROM DITA FILES



# BUILDING UP THE AI ENGINE FROM DITA FILES

The screenshot shows a DITA editor window with three tabs: `t_inst_tx_gui.dita`, `common-symbols.dita`, and `t_rslv_erz058001.dita`. The active tab displays a task structure. At the top, a comment reads: `#comment> Arbortext, Inc., 1988-2009, v.4002 <#comment`. Below this is a task header with the ID `task id="resolvingerrorerz058001e0185unsuccessfulloadofprogramvarcics_regionsregionnamebinpgmnameerror8" xml:lang="en-us"` and a title `Resolving error 112`. The task body includes a context section titled `About this task`. The main content describes an error: `error ERZ058001E` and `error ERZ058001E/0185`, stating: "You might receive the following error, along with the transaction abend code AEI0 when trying to execute CICS program. :. A code block follows: `ERZ058001E/0185: Unsuccessful load of program '/var/cics_regions/CICORBBP1/bin/ORBIDSGT'; error 8`. Two paragraphs provide further details: the first explains that the file `/usr/include/errno.h` lists `error 8` as `ENOEXEC` and that the file was corrupted during a copy action; the second paragraph states that the issue can be resolved by using binary format for FTP to copy files.

task title

#comment> Arbortext, Inc., 1988-2009, v.4002 <#comment

task id="resolvingerrorerz058001e0185unsuccessfulloadofprogramvarcics\_regionsregionnamebinpgmnameerror8" xml:lang="en-us" title Resolving error 112

taskbody context About this task

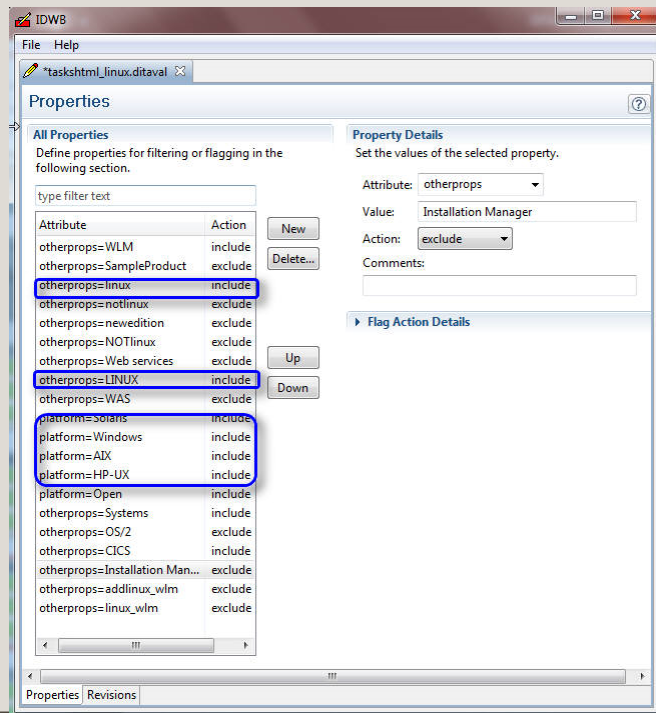
(indexterm error ERZ058001E (indexterm) (indexterm error ERZ058001E/0185 (indexterm) You might receive the following error, along with the transaction abend code AEI0 when trying to execute CICS program. :

```
codeblock ERZ058001E/0185: Unsuccessful load of program '/var/cics_regions/CICORBBP1/bin/ORBIDSGT'; error 8 codeblock
```

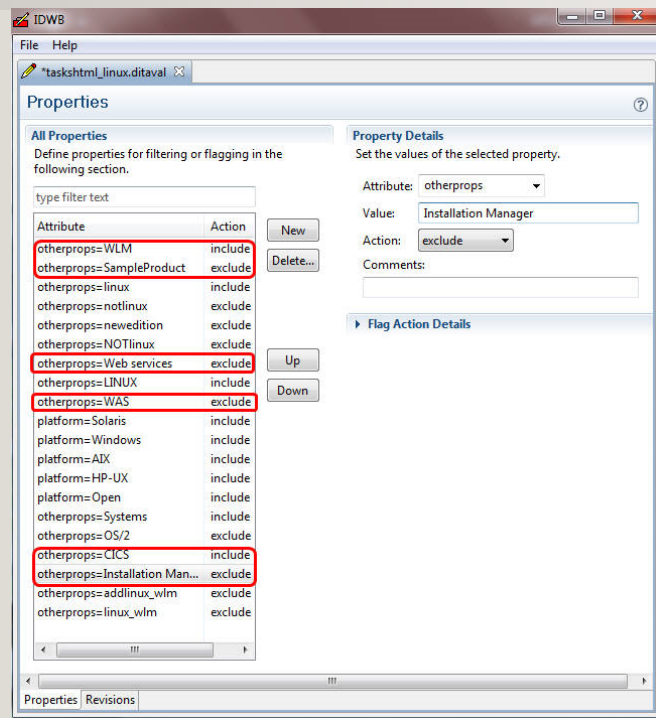
p> The file, filepath /usr/include/errno.h filepath lists cmdname error 8 cmdname as ENOEXEC. The file is not in a valid executable format and was copied to the filepath bin filepath directory from another server in the ASCII code, instead of binary. The copy action has corrupted some of the bit which were not valid ASCII text characters. p>

p> You can resolve this issue if you are using binary option for FTP to copy the files in binary format. Binary format copies the bits as is, without any conversion. p> context taskbody task

# BUILDING UP THE AI ENGINE FROM DITA FILES



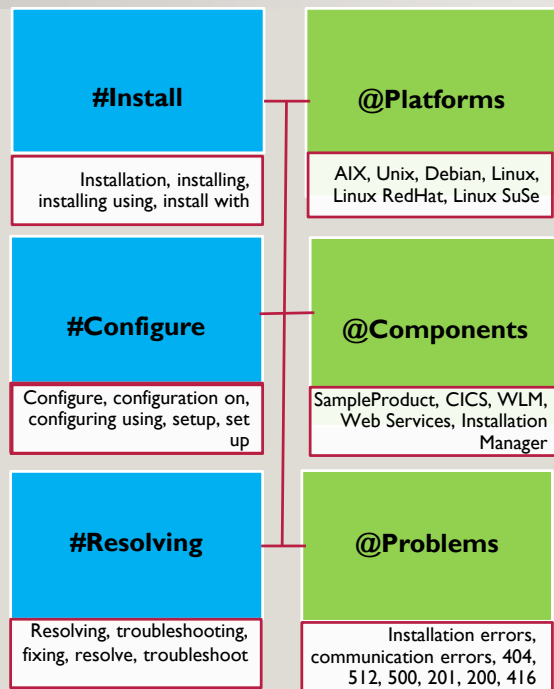
# BUILDING UP THE AI ENGINE FROM DITA FILES



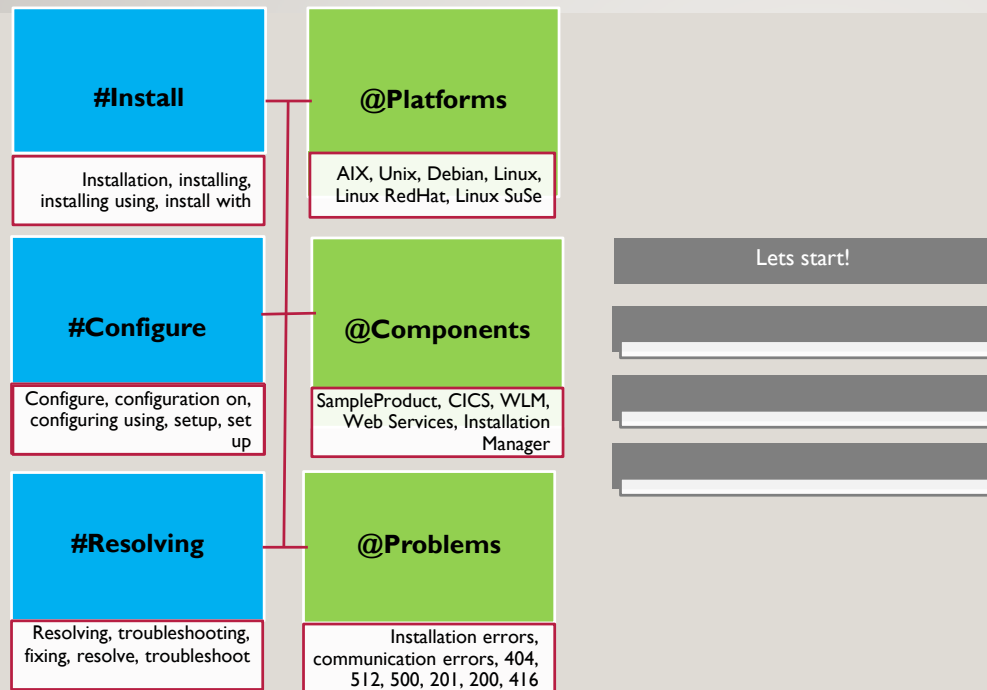


# BUILDING UP THE AI ENGINE FROM DITA FILES

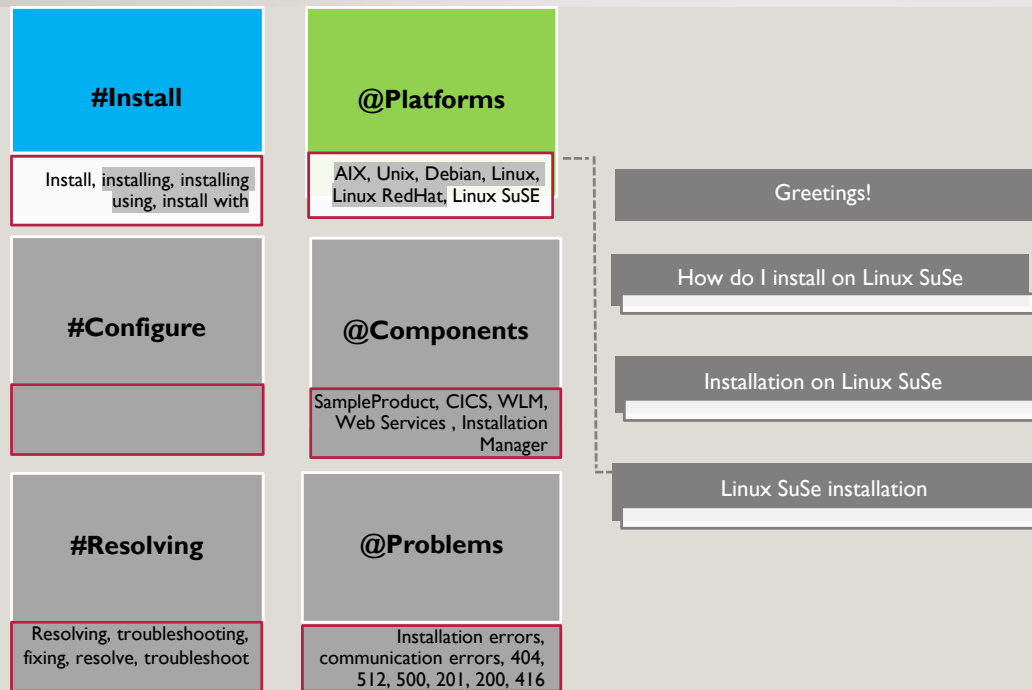
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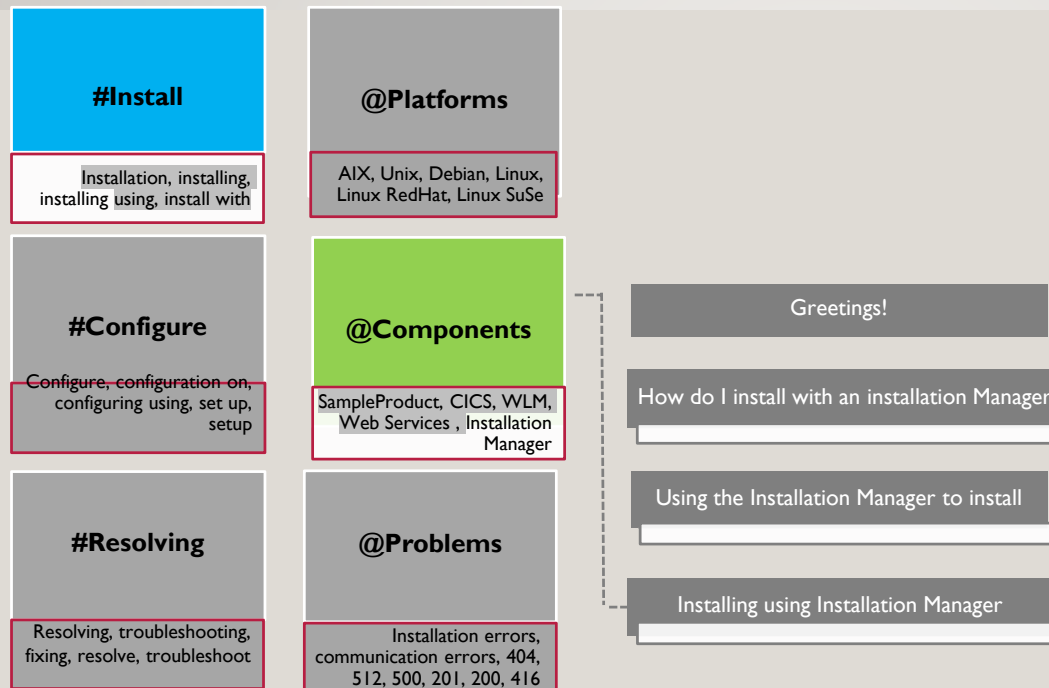
# HOW DOES IT WORK?



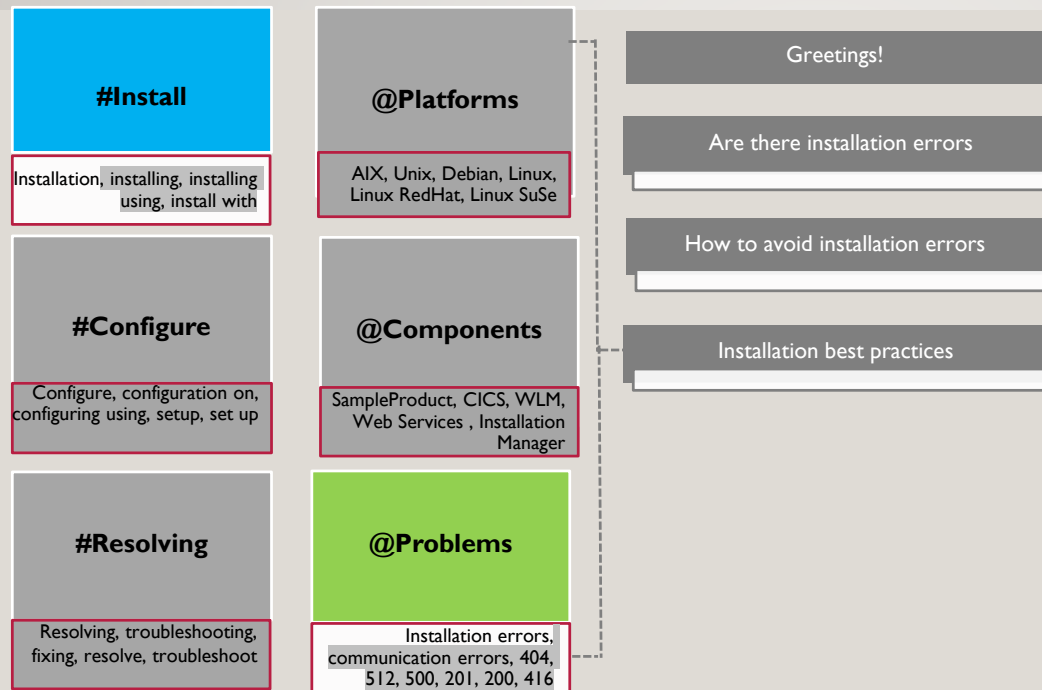
# HOW DOES IT WORK?



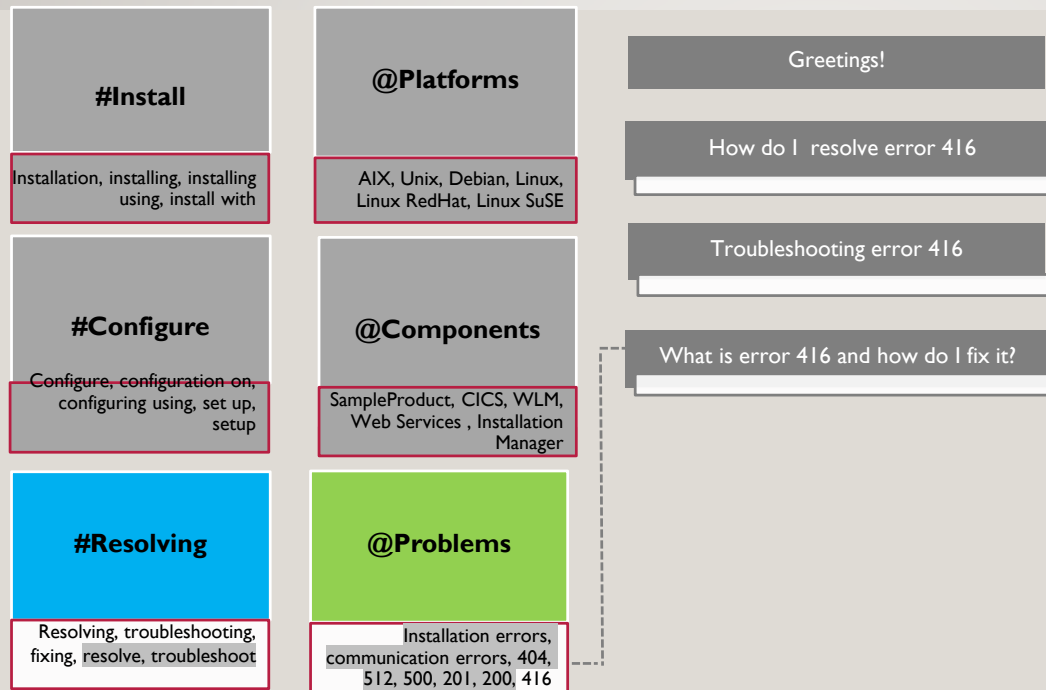
# HOW DOES IT WORK?



# HOW DOES IT WORK?



# HOW DOES IT WORK?



# BREAKING UP A QUESTION...

---

Q. I have just purchased the SampleProduct and have completed the installation. I'm trying to configure it with WAS now. How do I go about it?



# BREAKING UP A QUESTION...

---

Q. I have just purchased the SampleProduct and have completed the installation. I'm trying to configure it with WAS now. How do I go about it?

Try it out

↺ Clear

I have just purchased the SampleProduct and have completed the installation. I'm trying to configure it with WAS now. How do I go about it?

#configure ✓

@components:SampleProduct

@components:Installation Manager

@components:WAS

| Choose to configure either WAS version 4.1 or WAS version 4.2.

# DEMO

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<https://tcworld.mybluemix.net/>

# AI-DRIVEN CONTENT STRATEGY

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## Intents

Tasks

Guide me

Product  
problems

Commands



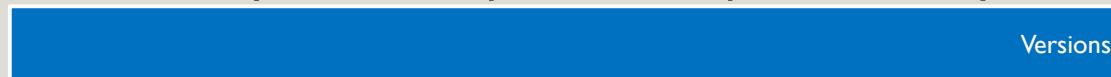
Components



Errors



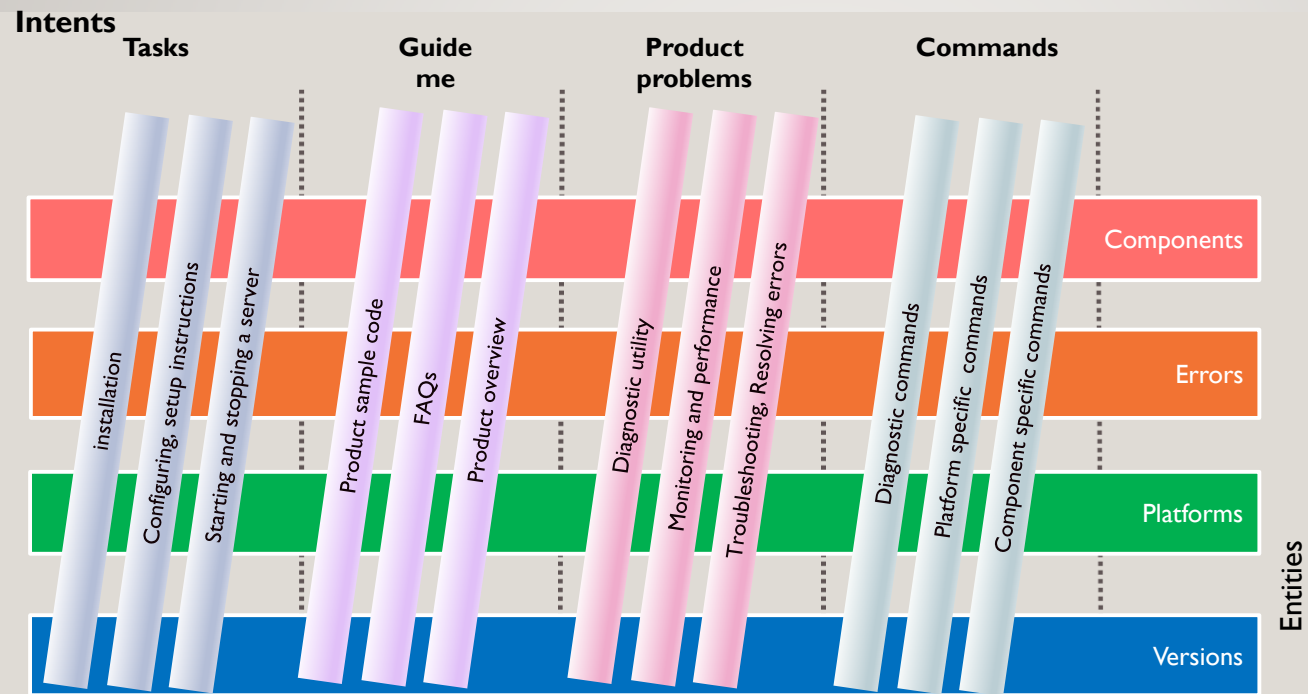
Platforms



Versions

Entities

# AI-DRIVEN CONTENT STRATEGY



# TAKEAWAYS

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Source files for creating a bot

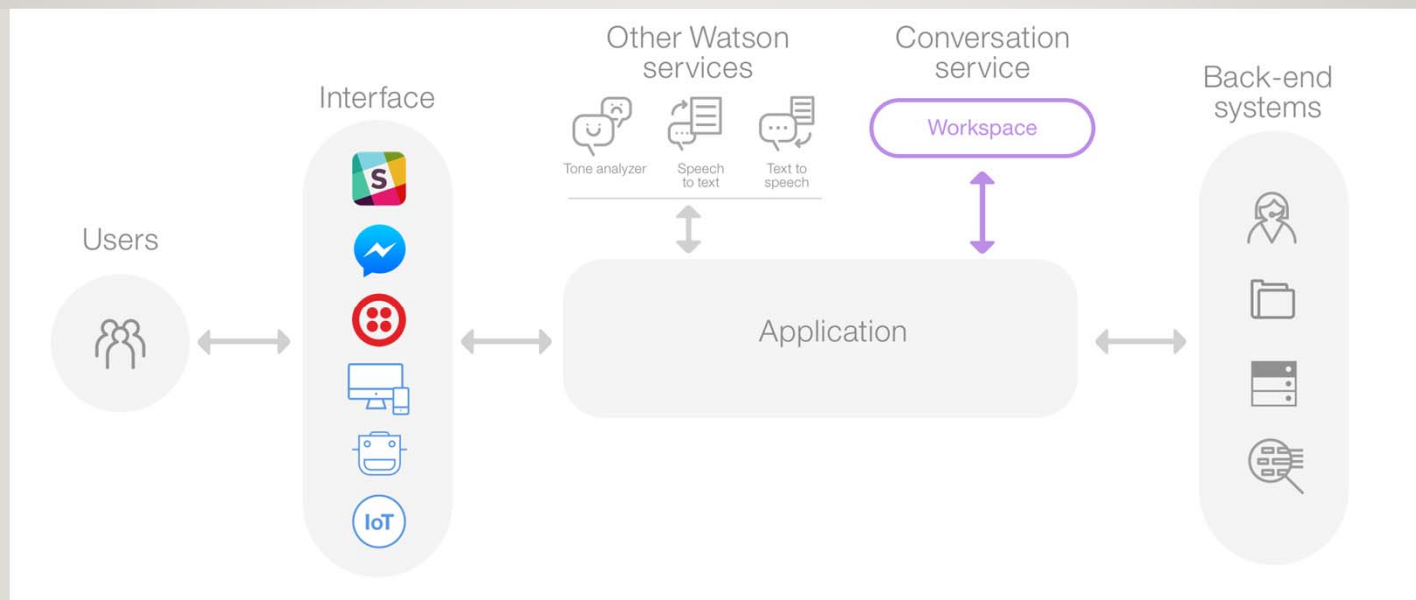
<https://github.com/vpalliya/DITA-SemanticExplorations>

# QUESTIONS & ANSWERS

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# BACKUP SLIDES





# INTERESTING READS

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Gartner Says Nearly Half of CIOs Are Planning to Deploy Artificial Intelligence

<https://www.gartner.com/newsroom/id/3856163>

# INTERESTING READS

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## **1. Aim Low at First**

"Don't fall into the trap of primarily seeking hard outcomes, such as direct financial gains, with AI projects," said Mr. Andrews. "In general, it's best to start AI projects with a small scope and aim for 'soft' outcomes, such as process improvements, customer satisfaction or financial benchmarking."

Expect AI projects to produce, at best, lessons that will help with subsequent, larger experiments, pilots and implementations. In some organizations, a financial target will be a requirement to start the project. "In this situation, set the target as low as possible," said Mr. Andrews. "Think of targets in the thousands or tens of thousands of dollars, understand what you're trying to accomplish on a small scale, and only then pursue more-dramatic benefits."

# INTERESTING READS

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## **2. Focus on Augmenting People, Not Replacing Them**

Big technological advances are often historically associated with a reduction in staff head count. While reducing labor costs is attractive to business executives, it is likely to create resistance from those whose jobs appear to be at risk. In pursuing this way of thinking, organizations can miss out on real opportunities to use the technology effectively. "We advise our clients that the most transformational benefits of AI in the near term will arise from using it to enable employees to pursue higher-value activities," added Mr. Andrews.

# INTERESTING READS

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## 3. Plan for Knowledge Transfer

Conversations with Gartner clients reveal that most organizations aren't well-prepared for implementing AI. Specifically, they lack internal [skills in data science](#) and plan to rely to a high degree on external providers to fill the gap. Fifty-three percent of organizations in the CIO survey rated their own ability to mine and exploit data as "limited" — the lowest level.

Gartner predicts that through 2022, 85 percent of AI projects will deliver erroneous outcomes due to bias in data, algorithms or the teams responsible for managing them.

"Data is the fuel for AI, so organizations need to prepare now to store and manage even larger amounts of data for AI initiatives," said [Jim Hare](#), research vice president at Gartner. "Relying mostly on external suppliers for these skills is not an ideal long-term solution. Therefore, ensure that early AI projects help transfer knowledge from external experts to your employees, and build up your organization's in-house capabilities before moving on to large-scale projects."

# INTERESTING READS

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## **4. Choose Transparent AI Solutions**

AI projects will often involve software or systems from external service providers. It's important that some insight into how decisions are reached is built into any service agreement. "Whether an AI system produces the right answer is not the only concern," said Mr. Andrews. "Executives need to understand *why* it is effective, and offer insights into its reasoning when it's not."