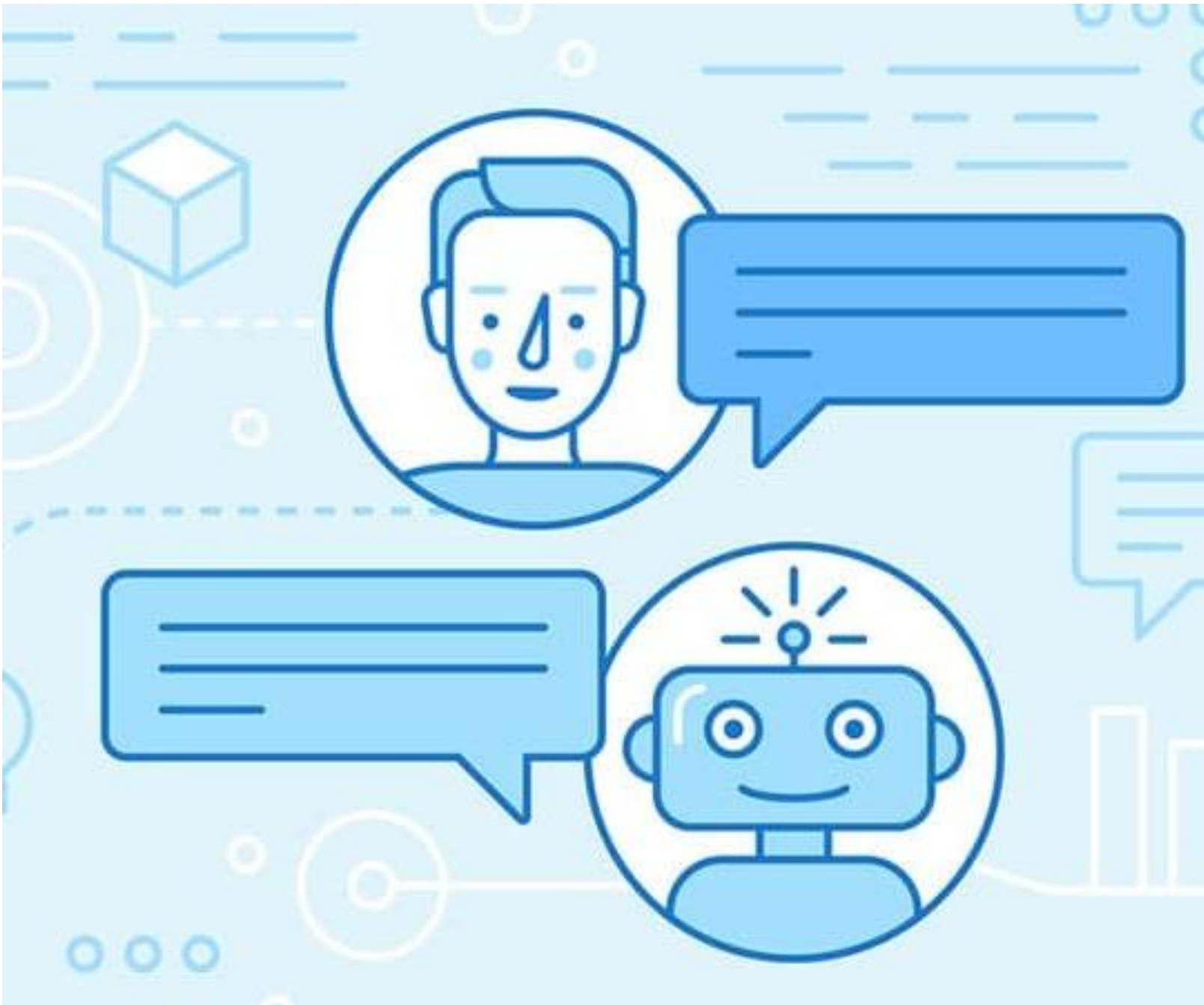




# BOT DE RESERVATION DE VOLS

Cédric Dietzi  
12/07/2021



## Contexte

Fly Me, agence de voyage, souhaite développer son premier ChatBot de réservation.

Ce premier MVP inclut:

- l'identification des informations principales
- les fondations d'un monitoring et d'alertes
- des capacités d'entraînement et d'évaluation off-line

- Mise en forme du jeu de données MS - 1369 dialogues
- Entraînement et déploiement du modèle LUIS
- Architecture et développement du Bot sur la base du Bot Framework SDK 4
- Intégration des ressources LUIS, Insights, CosmosDB
- Tests du bot en local
- Implémentation des tableaux de bord et alertes
- Déploiement du Bot sur Azure
- Tests sur le cloud

## Etapes du projet

Information storage  
relevant conversations  
LUIS results



UX Features  
cancel and help  
time and date format



Bot

Welcome  
dialog

Main dialog

Unclear dialog

Book a flight  
dialog

Others ...

# MVP – Features & Architecture

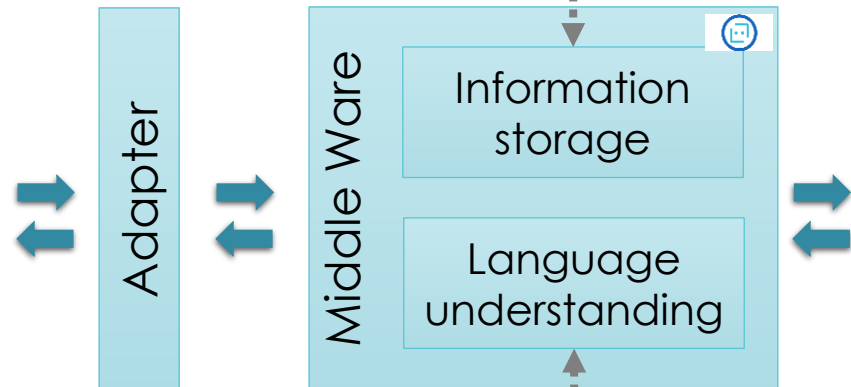


Telemetry

request rates, response time  
user/ sessions counts  
custom events and metrics



Alerts



Language Understanding

Intent  
book a flight  
none

Entities  
origin  
destination  
start date  
return date  
budget



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Alerts

## Language Understanding

i ' d like to book a trip to rome for business purposes . what ' s available for departures from

dst\_city  
geography...

0.995

calgary ?  
or\_city  
geography...

what about flights to la paz from toronto ?

dst\_city  
or\_city  
geography...

0.971

sorry , my mistake . we are leaving from neverland and would like to go to leon .

or\_city  
geographyV2  
dst\_city  
geog...

0.986

hi i need a break from gotham city , the crime rate is just too high . i ' d like to go to hogsmead  
with 3 kids and 9 adults .

or\_city  
dst\_city

0.999

hey ! you can help me by finding a trip to philadelphia from maceio .

dst\_city  
or\_city  
geographyV2  
geograp...

0.986



Adapter



Middle Ware

Information  
storage

Language  
understanding

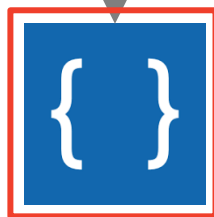
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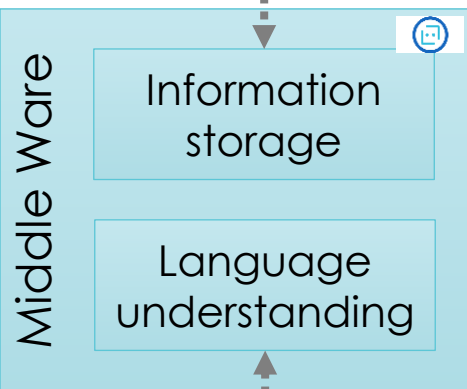
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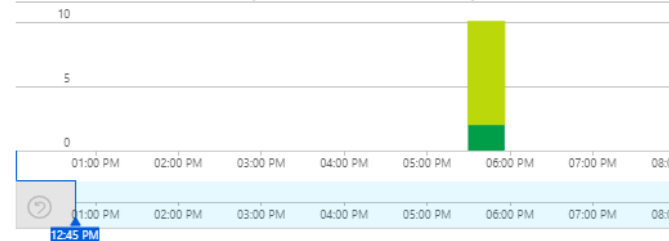
request rates, response time  
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custom events and metrics



Alerts

Telemetry

10 total results between 7/9/2021, 12:45:00 PM and 7/10/2021, 12:45:00 PM



Availability 0 Request 0 Exception 0 Page View 0 Trace 2 Custom Event 8 Dependency 0

Results Grouped results (2)

7/9/2021, 5:34:13 PM - CUSTOM EVENT  
WaterfallStep

7/9/2021, 5:34:13 PM - TRACE  
Success  
Severity level: null

7/9/2021, 5:33:30 PM - CUSTOM EVENT  
WaterfallStep

7/9/2021, 5:32:58 PM - CUSTOM EVENT  
WaterfallStart

7/9/2021, 5:32:58 PM - CUSTOM EVENT  
WaterfallStep

7/9/2021, 5:32:58 PM - CUSTOM EVENT  
WaterfallStep

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Alerts

Alerts

Jeudi

<input type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor alert ...
<input type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor alert ...
<input type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor alert ...
<input checked="" type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor ...
<input type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor alert ...
<input type="checkbox"/>	Microsoft Azure	★ Bot Alert	Threshold has been hit was triggered. Your Azure Monitor alert ...
<input type="checkbox"/>	DeepLearning.AI	★ The Batch: Zillow's New Neural Net, Optimizing Traffic City-Wide, Classifyin...	
<input type="checkbox"/>	Discord	★ YAGPDB.xyz t'a mentionné sur Serveur de Arca Libre	Tu préfères les notific...

Microsoft Azure

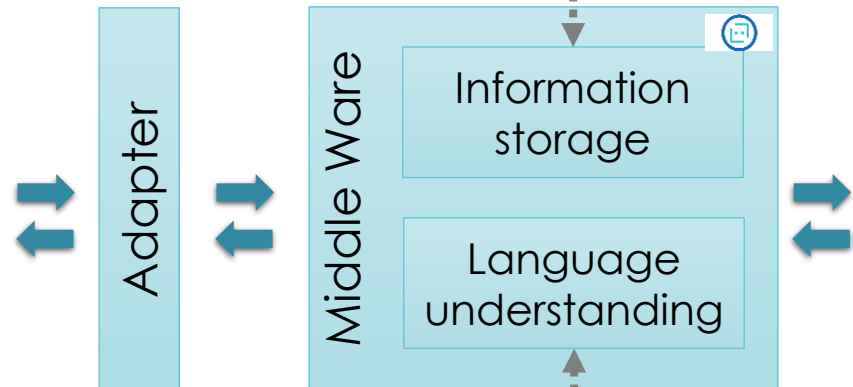
### ! Your Azure Monitor alert was triggered

We are notifying you because there are 1 counts of "Threshold has been hit".

#### Essentials

Name	Threshold has been hit
Description	A customer has reported a wrong evaluation of its travel details
Severity	0
Resource	p10-insights
Search interval start time	July 8, 2021 19:51:24 UTC
Search interval duration	5 min
Dimensions	

[View 1 result\(s\) >](#)



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Information storage  
/ retrieval  
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- Welcome dialog
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- Others ...



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Alerts

## Information Storage / Retrieval

```
1  {
2    "id": "962e65c0-e0ce-11eb-b2c8-63296613ad40",
3    "realId": "962e65c0-e0ce-11eb-b2c8-63296613ad40",
4    "document": [
5      "[User]: i want to book a flight",
6      "[Bot]: Where would you like to travel to?",
7      "[User]: to paris",
8      "[Bot]: From what city will you be travelling?",
9      "[User]: I will take off from london",
10     "[Bot]: On what date would you like to travel in?",
11     "[User]: mar 23 21",
12     "[Bot]: On what date would you like to travel back?",
13     "[User]: 2/4/21",
14     "[Bot]: What is your maximum budget for this trip ?",
15     "[User]: 500",
16     "[Bot]: Please confirm: I have you traveling to paris\nfrom london on 2021-03-23.\nYour flight back is sch",
17     "[User]: No",
18     "[Bot]: What else can I do for you?"
19   ],
20   "_rid": "VXRuAKbnxNoBAAAAAAAAA==",
21   "_self": "dbs/VXRuAA==/colls/VXRuAKbnxNo=/docs/VXRuAKbnxNoBAAAAAAAAA==/",
22   "_etag": "\"0f000a10-0000-0000-0000-60e872480000\"",
23   "_attachments": "attachments/",
24   "_ts": 1625846344
25 }
```



Information storage  
/ retrieval  
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Bot

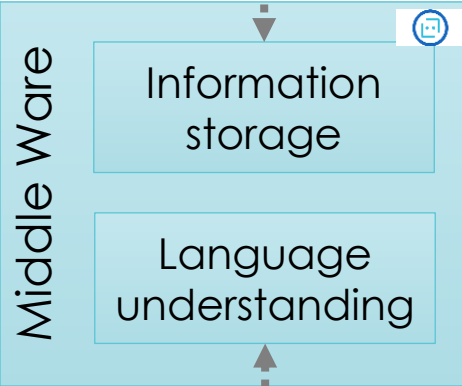
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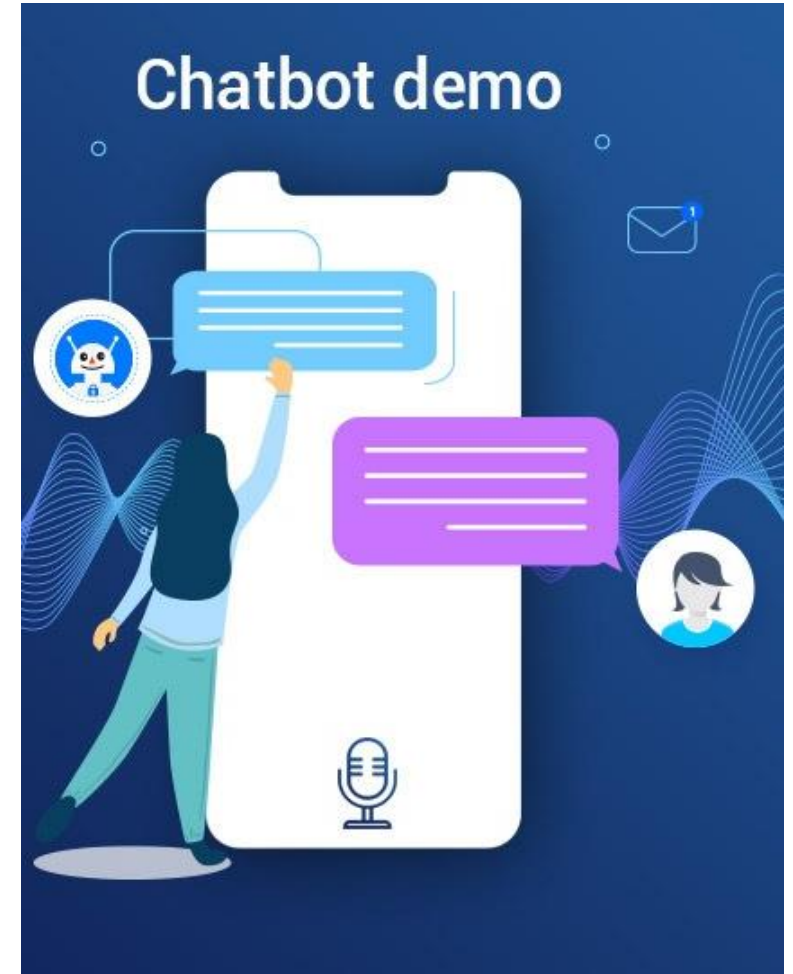
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Alerts

## Chatbot demo



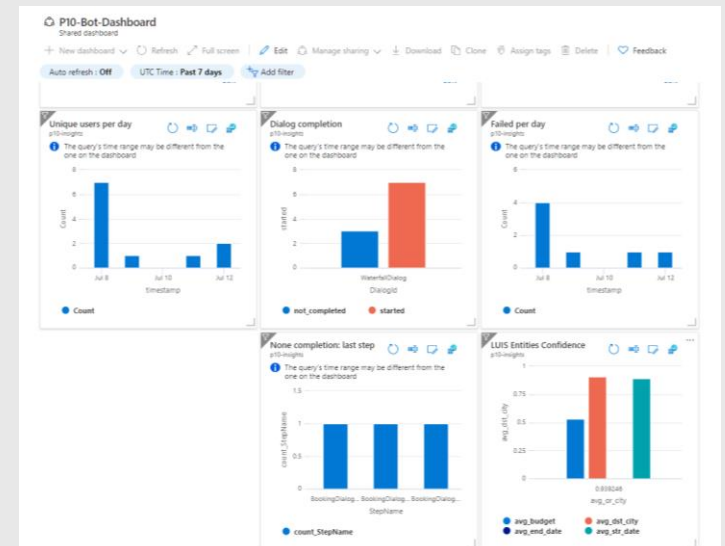
## « Cahier des charges » du pilotage de la performance

- **Monitorer la qualité de l'UX:** la conversation avec le chat bot doit être fluide et permettre au client d'obtenir aisément le service souhaité.
- **Monitorer la qualité des réponses du chat bot:** le chat bot étant en contact direct avec le client, il contribue à l'image de marque. Il est essentiel de s'assurer de la qualité des informations fournies par le chat bot.
- **Synthétiser l'information** dans des tableaux de bord, **Alerter** en cas de dépassement de seuil: la collecte des données de monitoring n'est pertinente que si l'information est accessible facilement, au niveau de granularité adapté
- **Intégrer la collecte des données pour le ré-entraînement** du modèle dans l'UX: les conversations des clients avec le chat bot sont une source de données précieuses pour ré-entraîner le modèle.
- **Mesurer** la performance du modèle, **Ré-entraîner** et **Re-déployer** le modèle: pour améliorer les prédictions du modèle IA intégré à la solution.

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## Pilotage de la performance

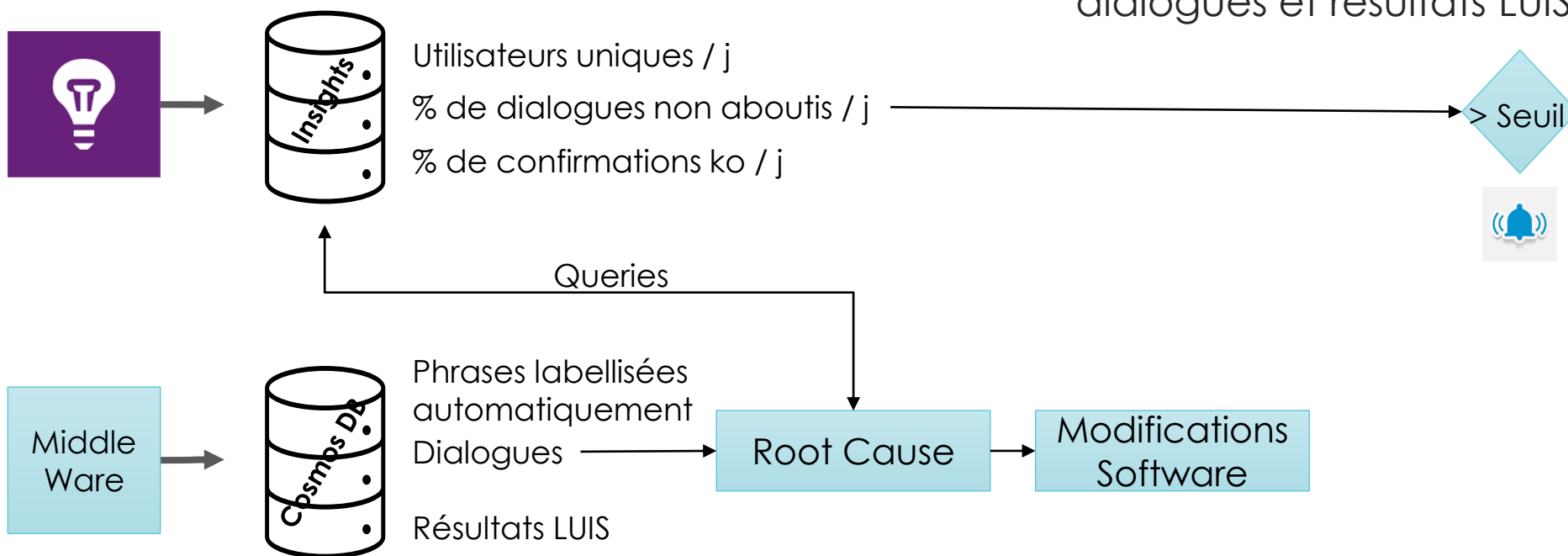
Garantir la satisfaction et donc l'engagement client



Objectif	Métrique
Garantir la satisfaction client	% Utilisateurs uniques / j
Garantir la qualité de l'UX	% de dialogues non aboutis / j
Garantir la qualité des réponses	% de confirmation ko / j

## Pilotage de la performance: qualité de l'expérience utilisateur

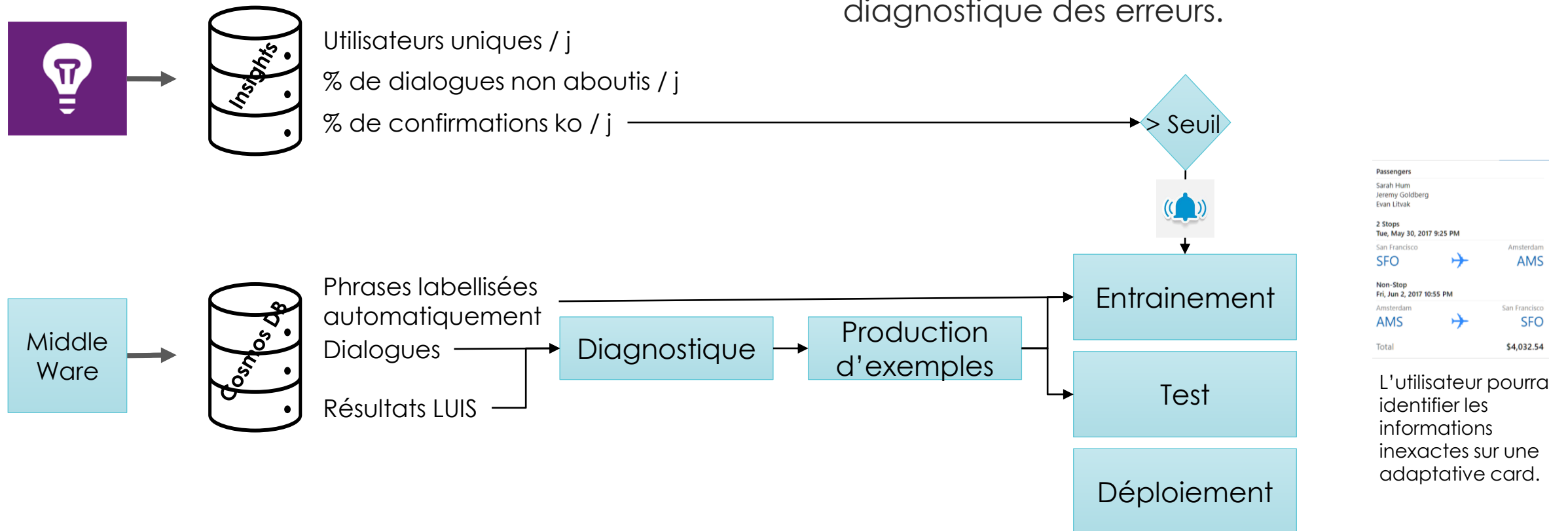
Lorsque le % de dialogues non-aboutis dépasse un seuil, on recherche la cause racine du problème pour apporter les modifications pertinentes au software. Le diagnostic est facilité par le requêtage évènements enregistrés par Insights et les dialogues et résultats LUIS dans Cosmos DB.



Objectif	Métrique
Garantir la satisfaction client	% Utilisateurs uniques / j
Garantir la qualité de l'UX	% de dialogues non aboutis / j
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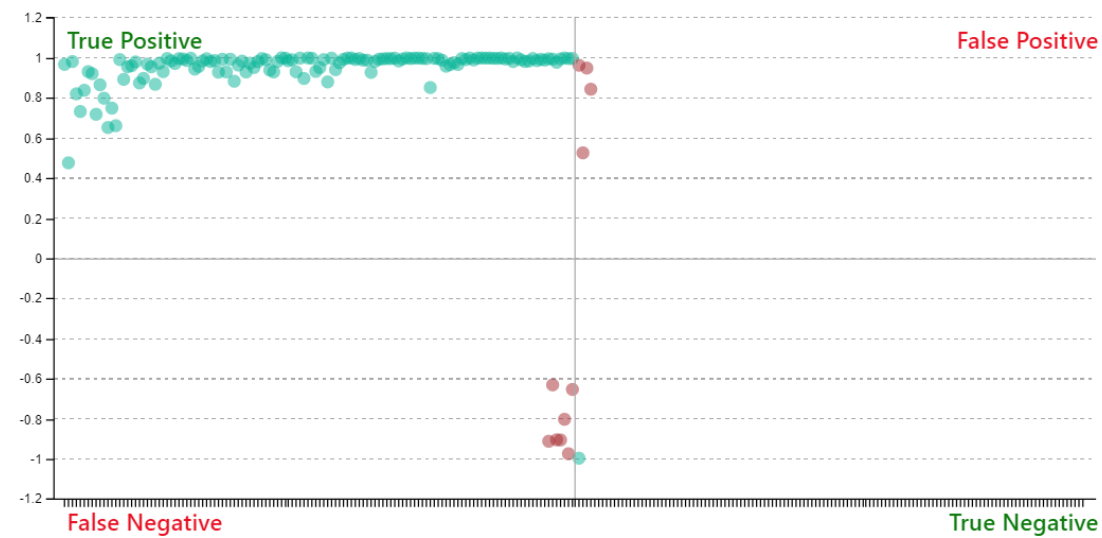
## Pilotage de la performance: qualité des réponses

Lorsque le % de confirmations de l'utilisateur dépasse un seuil, on ré-entraîne le modèle sur des données générées automatiquement à partir des interactions clients et / ou sur des données labellisées à la main suite à diagnostic des erreurs.



# Démonstration d'un test de LUIS par batch

Dataset 'Test' results



^ Intents
✖ inform (131/142)
✖ None (131/142)
^ Entities
✖ budget (135/144)
✖ dst_city (111/160)
✖ end_date (122/143)
✖ or_city (107/147)
✖ str_date (115/146)

Model 'inform' Statistics

Precision: 0.97

Recall: 0.95

F-Score: 0.96

## Pilotage de la performance

- Gestion de versions sous GitHub
- Classes de tests
- Tests lancés automatiquement avant chaque commit
- Déploiement automatique sur Azure à chaque push

Best Practices  
mises en œuvre