



# Digital Analytics Meetup

*Thessaloniki*

## Chatbot Analytics

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# project scope

**what:** enhance access to basketball stats & content

**who:** baresquare for Euroleague Basketball SA

**how:** prototype chatbot in Facebook Messenger

**when:** 2017 Final Four (19-21 May)



# is it worth building a chatbot?

- chatbots **mimic conversation with people** using (in some cases) artificial intelligence (AI) - it's easy/cool to build one
- people are now spending **more time** in messenger apps than in social networks
- it's a scalable solution thanks to **cloud computing** advances
- **low acquisition costs**, also as a result of its fan factor

# Natural Language Processing (NLP)

## OPTIONS

### Rule-based

- not really a chatbot
- inflexible/not scalable
- does not handle input variations

### Custom Q&A system

- no corpus of relevant questions and answers
- no possibility of calling the API
- active research problem

### NLP engine as a service

- easy to use
- flexible/scalable
- free for commercial use (wit.ai, api.ai, LUIS, Watson, Lex)

## 1 Create a story (intent)

F4 MVP

Who was the MPV in F4 in 2008?

intent f4\_mvp

wit/number 2008

phase final-four

Add a new entity

## 3 Train the system

Test how your app understands a sentence

You can train your app by adding more examples

MVP of 2014

intent f4\_mvp

wit/number 2014

Add a new entity

Validate

## 5 Call wit.ai via API

```
[
  {
    "confidence": null,
    "intent": "default_intent",
    "_text": "MVP of 2014",
    "entities": {
      "number": [
        {
          "confidence": 1,
          "value": 2014,
          "type": "value"
        }
      ]
    },
    "intent": [
      {
        "confidence": 0.9880097733667,
        "value": "f4_mvp"
      }
    ]
  }
]
```

## 2 Add entities

player

User-defined entity

Search strategy  trait  free-text  keywords

Keywords

Keyword	Synonyms
munford	Add synonym...
baxter	Add synonym...
mccalebb	Add synonym...
ovcina	Add synonym...
lavrinovic darjus	darjus lavrinovic Add synonym...

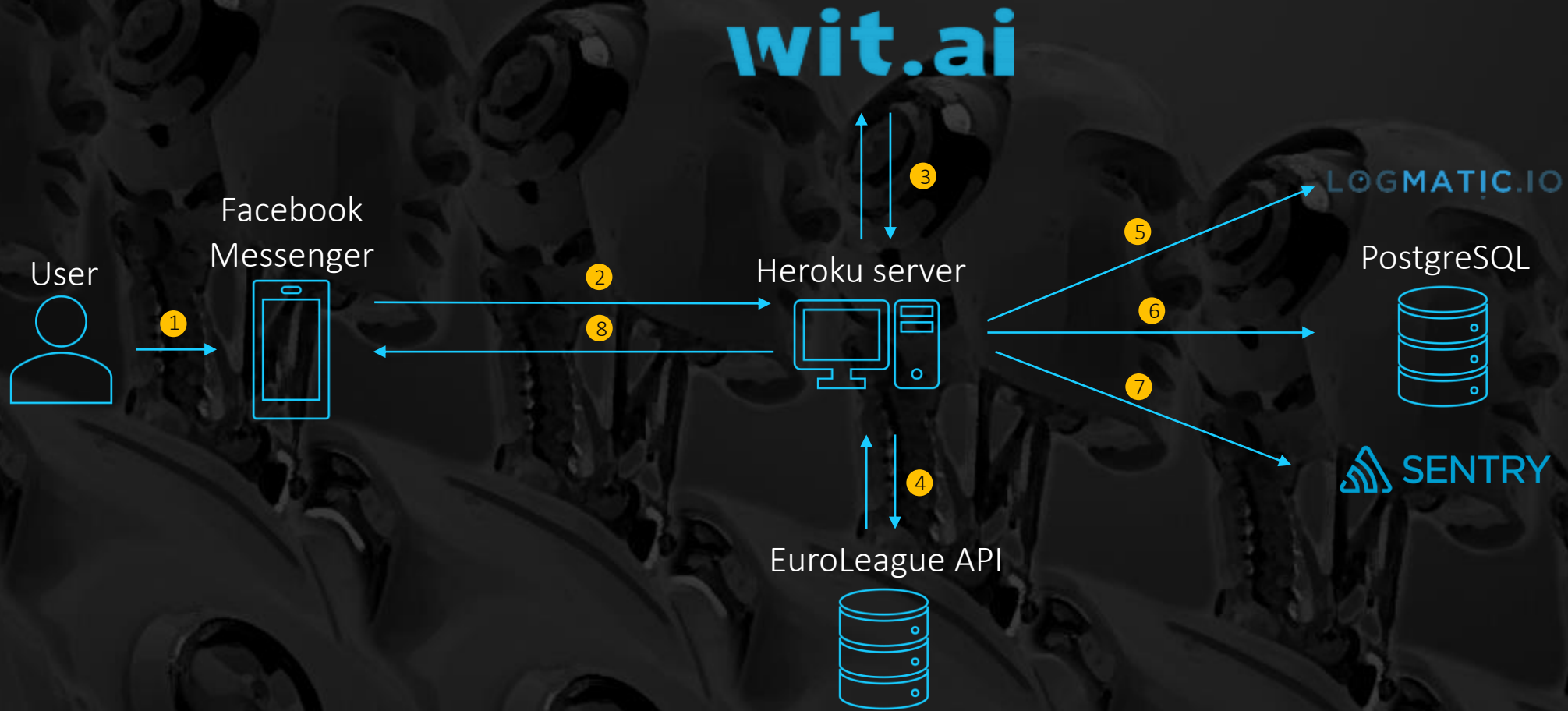
## 4 Wait till it's trained

wit.ai

Training status: clean

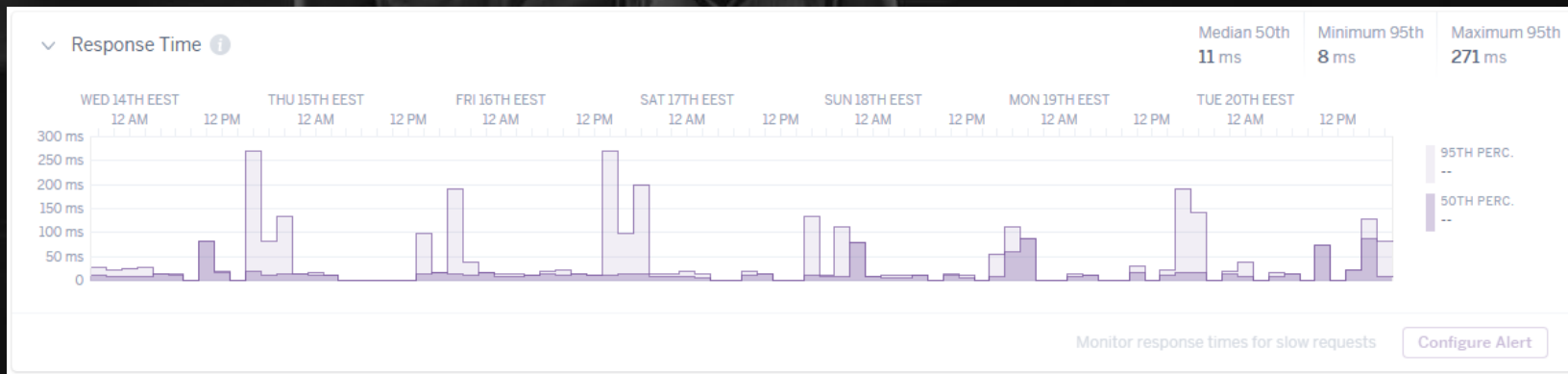
asstergi / Euroleague\_chatbot /

# chatbot architecture



# analytics for infrastructure

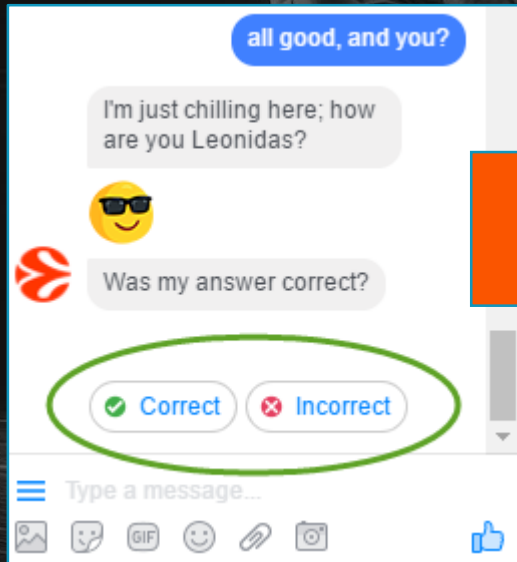
## how to ensure system's reliability



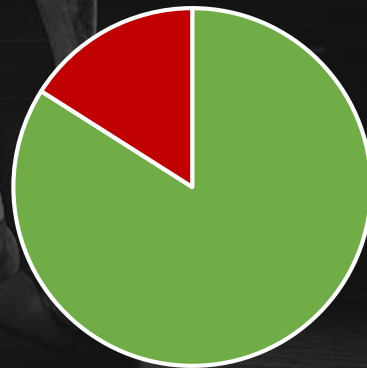
- Web/worker servers (memory usage, dyno load, response time)
- Redis (connection limit)
- PostgreSQL (connection limit, expensive queries)
- Celery (queue size)

# analytics for understanding the user experience

find a way to measure chatbot's efficiency from a user perspective:  
**embedded rating question worked better**



correct vs incorrect replies (%)



■ correct ■ incorrect



continuous  
bug fixing  
&  
improvements



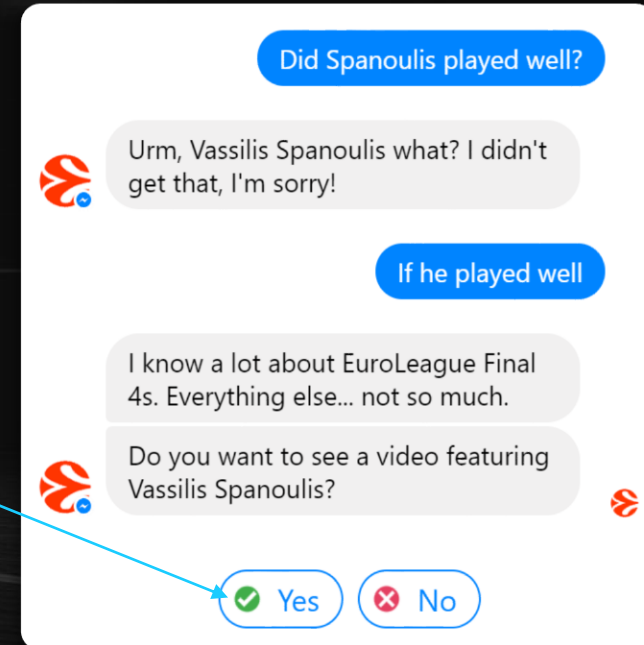
# analytics for enhancing interactions

minimize the number of times the discussion leads to a dead-end:  
**introduction of follow up suggestions via buttons improved interaction rate**

testing phase:  
almost 1/3 of users  
exited the chatbot  
discussion when a free  
user input was purely  
required

only 4 interactions per  
user were initially  
recorded

introduced follow  
ups via buttons  
when an intent was  
identified  
(70% click-through)



Did Spanoulis played well?

Urm, Vassilis Spanoulis what? I didn't get that, I'm sorry!

If he played well

I know a lot about EuroLeague Final 4s. Everything else... not so much.

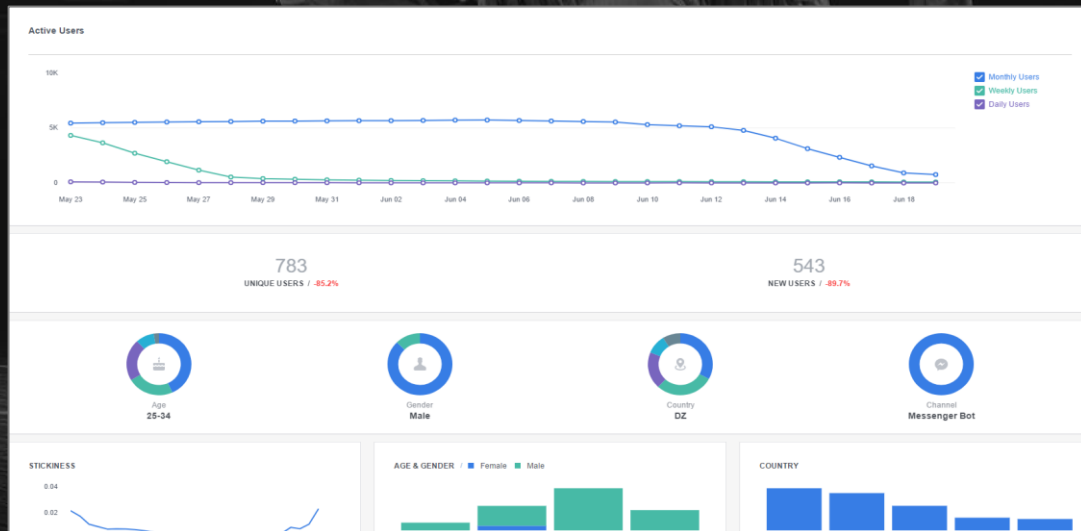
Do you want to see a video featuring Vassilis Spanoulis?

Yes  No

# analytics for users profiling

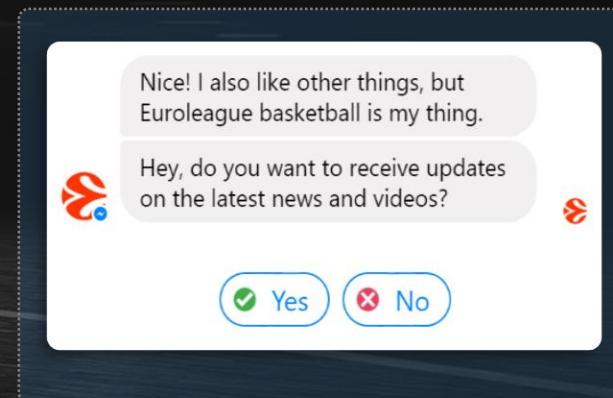
FB app analytics were not enough for users profiling  
**introduction of profiling/subscription questions within the discussion flow**

FB app analytics



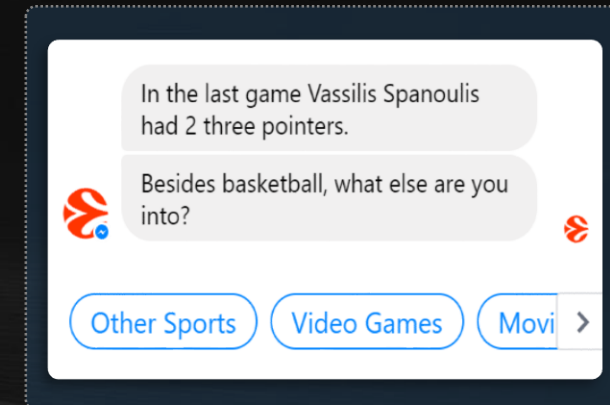
custom analytics

subscribe to  
notifications



The screenshot shows a notification subscription dialog. It features a red and white logo on the left. The text reads: "Nice! I also like other things, but Euroleague basketball is my thing." followed by "Hey, do you want to receive updates on the latest news and videos?". At the bottom, there are two buttons: "Yes" with a green checkmark and "No" with a red X.

user  
profiling



The screenshot shows a user profiling dialog. It features a red and white logo on the left. The text reads: "In the last game Vassilis Spanoulis had 2 three pointers." followed by "Besides basketball, what else are you into?". At the bottom, there are three buttons: "Other Sports", "Video Games", and "Movi" with a right arrow.

# how analytics added value

## USER PERFORMANCE STATS



**6K**

users



**7.3**

questions/user



**86%**

correct replies



**99.6%**

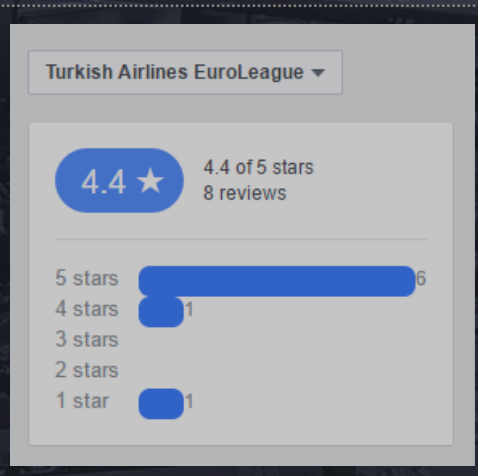
up time



**1.7sec**

bot response time

## RATING



## ENGAGEMENT STATS



**25%**

subscription rate



**33%**

response rate in  
profiling questions



**15%**

repeated users

when AI does not work...  
or  
it sounds all Greek to me



0:03

I cannot recognize audio commands yet! Stay tuned!



Γιατι δεν με θες;

I'm sorry but I cannot understand Greek



Κανεις δεν με αγαπάει

I'm sorry but I cannot understand Greek



Ti den katalaveneis?

I hate it when I don't understand, but it happens - Could you give it another try please?

How about I show you what I can do...

