Python

INTERMEDIATE

Rapid prototyping using Python libraries and integration with local and remote services

POLITECNICO
DI TORINO

e-Lite

The Starting Point

- You (should) have the basic knowledge for creating Python programs from scratch
- In realizing an application, you can *stand on the shoulders of giants*
  - i.e., reuse things (libraries, packages, etc.) made available by other developers
- In looking for libraries to integrate with your application, it could be useful to
  - Keep It Simple Stupid (KISS)

What can I integrate?

- Libraries and packages to provide more functionality, algorithms, etc. to your own program
  - e.g., complex math operations, statistical packages, OS interfaces, …
- Libraries and packages to integrate external (cloud, web) services
  - e.g., weather, social networks, …

Integrate Python Packages

- To use other Python packages in your applications you should
  - install them (typically)
  - import them
- Python modules can be installed with the `pip` command

```
pip install <package_name>
```

```
Learn more about pip at https://pip.pypa.io
```

Learning by Example

- We would like to realize a Telegram bot (AmIBot) that
  - greets us
  - acts as a textual parrot, by sending back as text whatever we write (*textual echo)*
  - acts as a parrot, by sending back as voice whatever we write (*vocal echo)*

What is a Telegram bot?

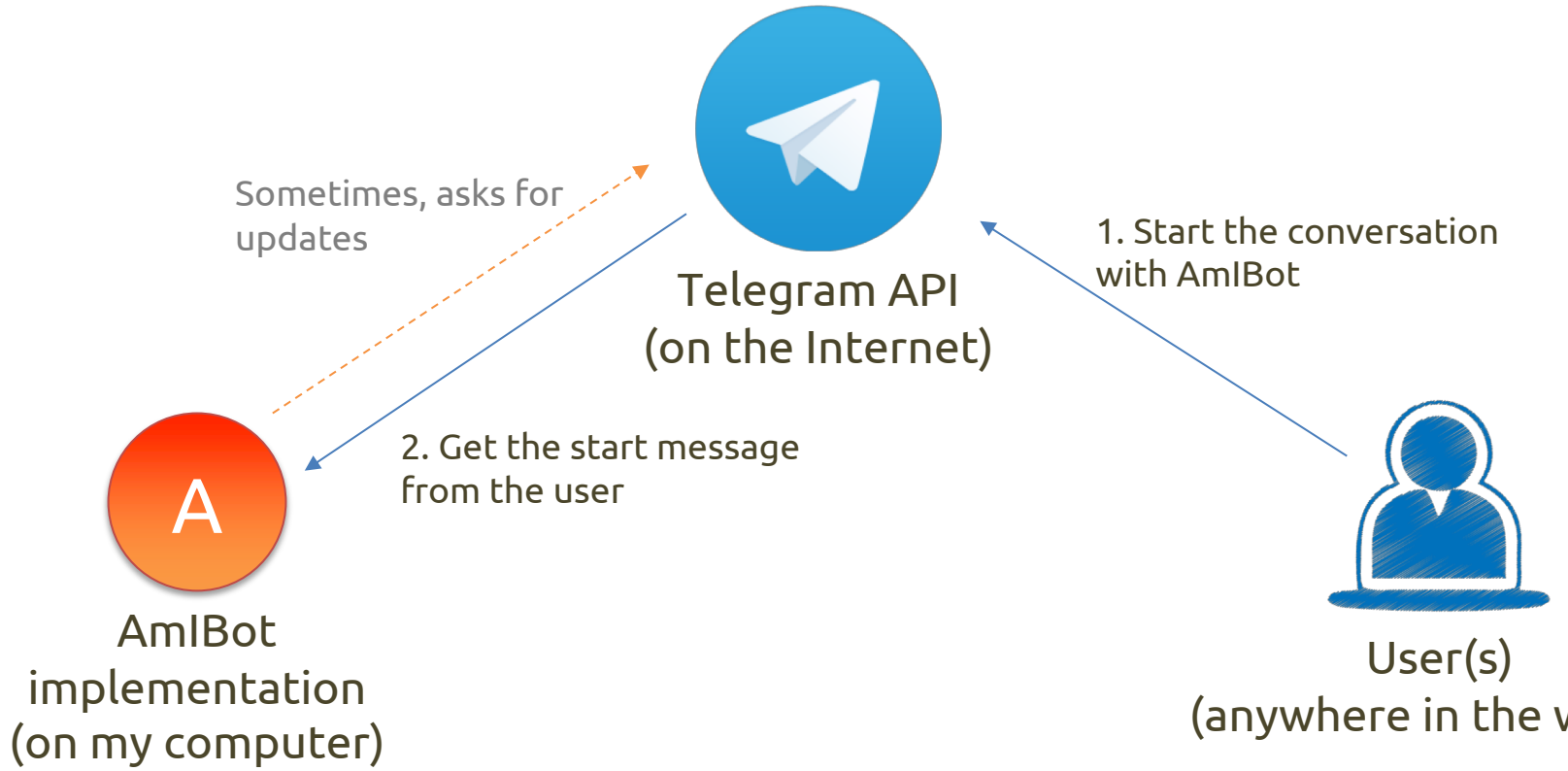
- A third-party application that run inside Telegram
- Users can interact with bots by sending them
  - messages
  - commands
  - inline requests
- Developers can control their own bots using the Telegram bot API or dedicated libraries

```
Discover more at https://core.telegram.org/bots
```

How to create a Telegram bot?

- First, ask BotFather
  - set up a bot account with @BotFather
  - it will ask you for
    - a name (I chose `AmIBot`)
    - a username that must end in 'bot' (I chose `AmI2019_bot`)
  - Then, BotFather will give you
    - a token to use the Telegram API
    - a Telegram link to let users converse with your bot

How will our bot work?



(from 10,000 feet…)

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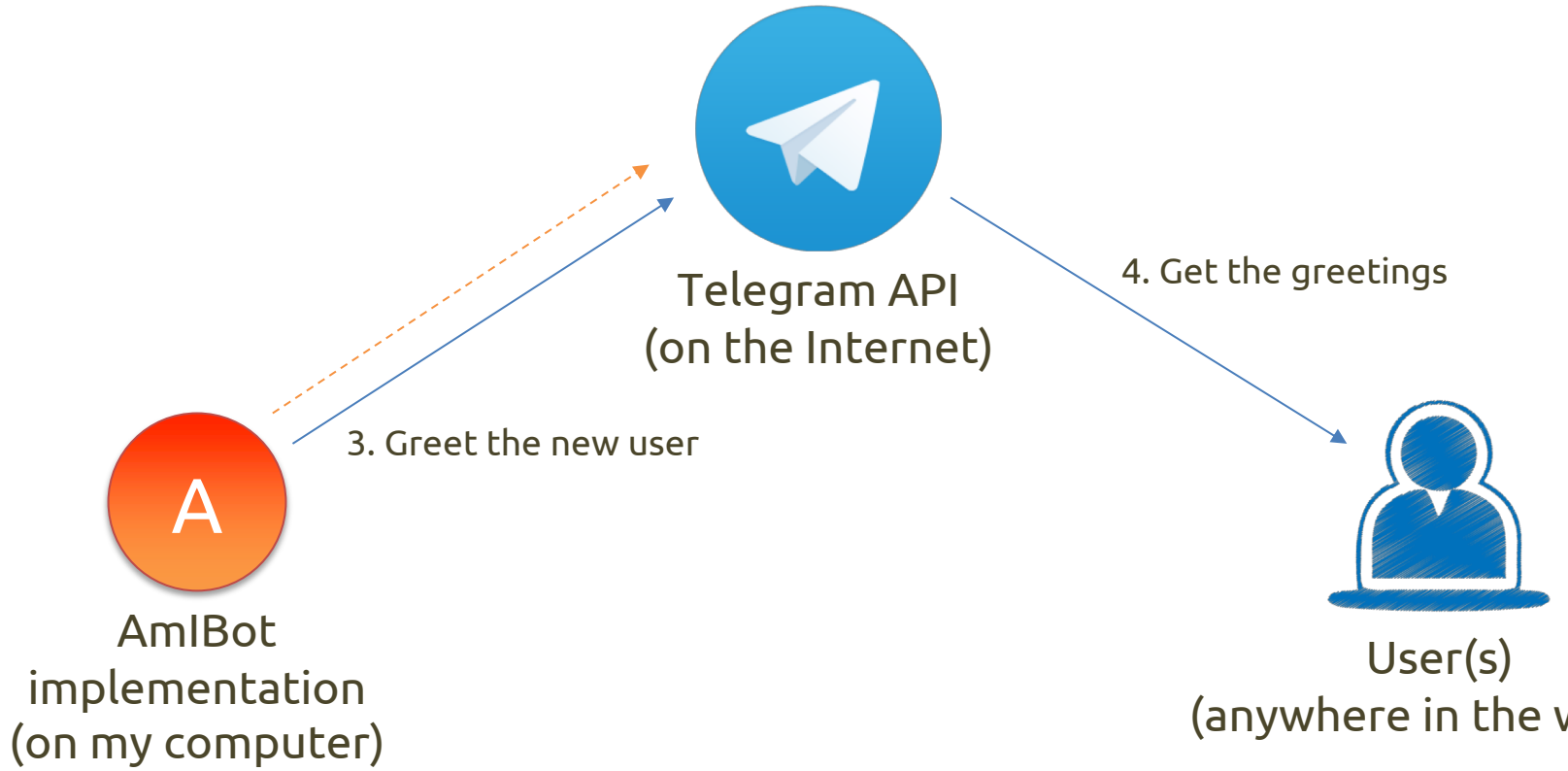

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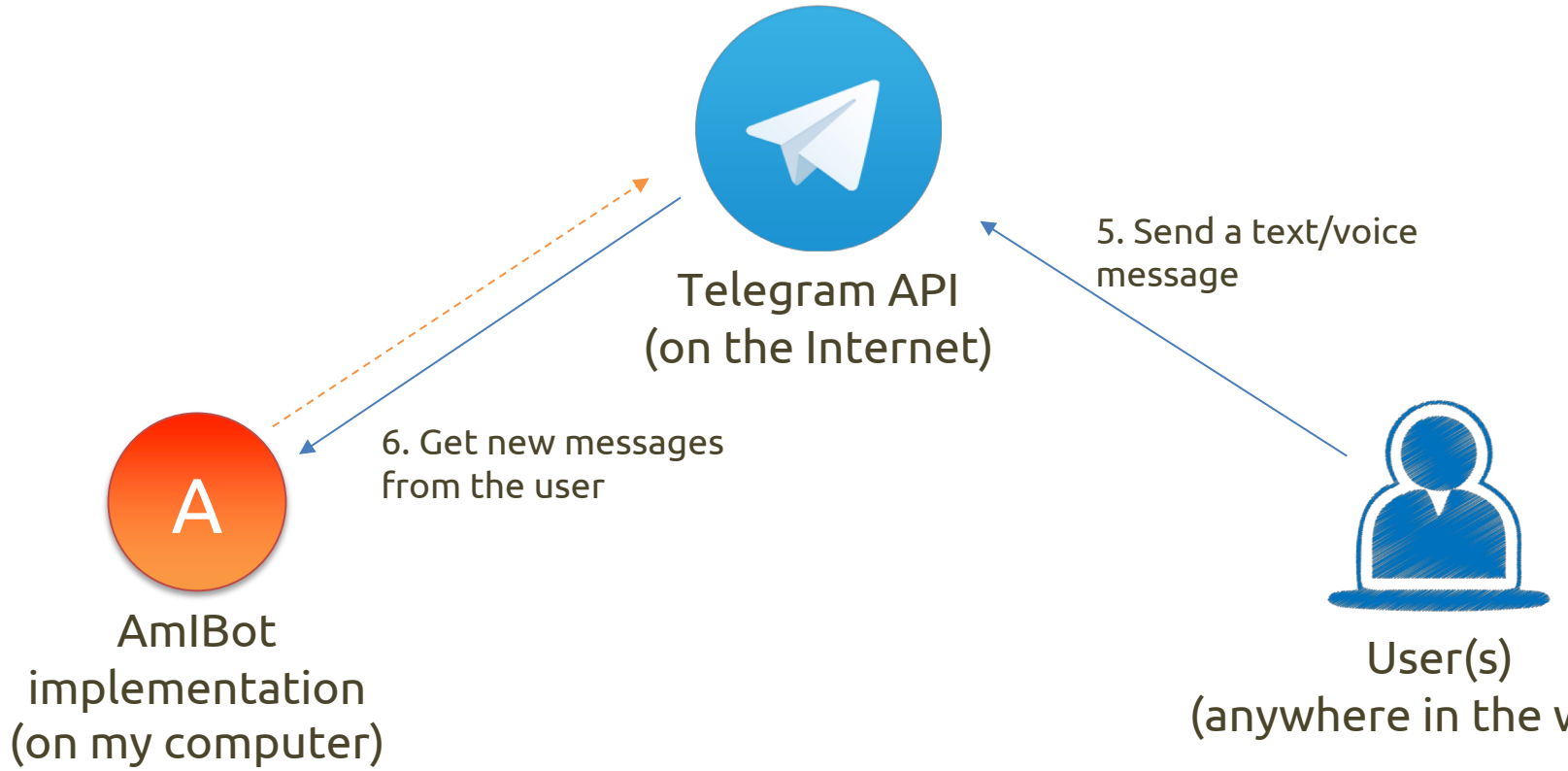

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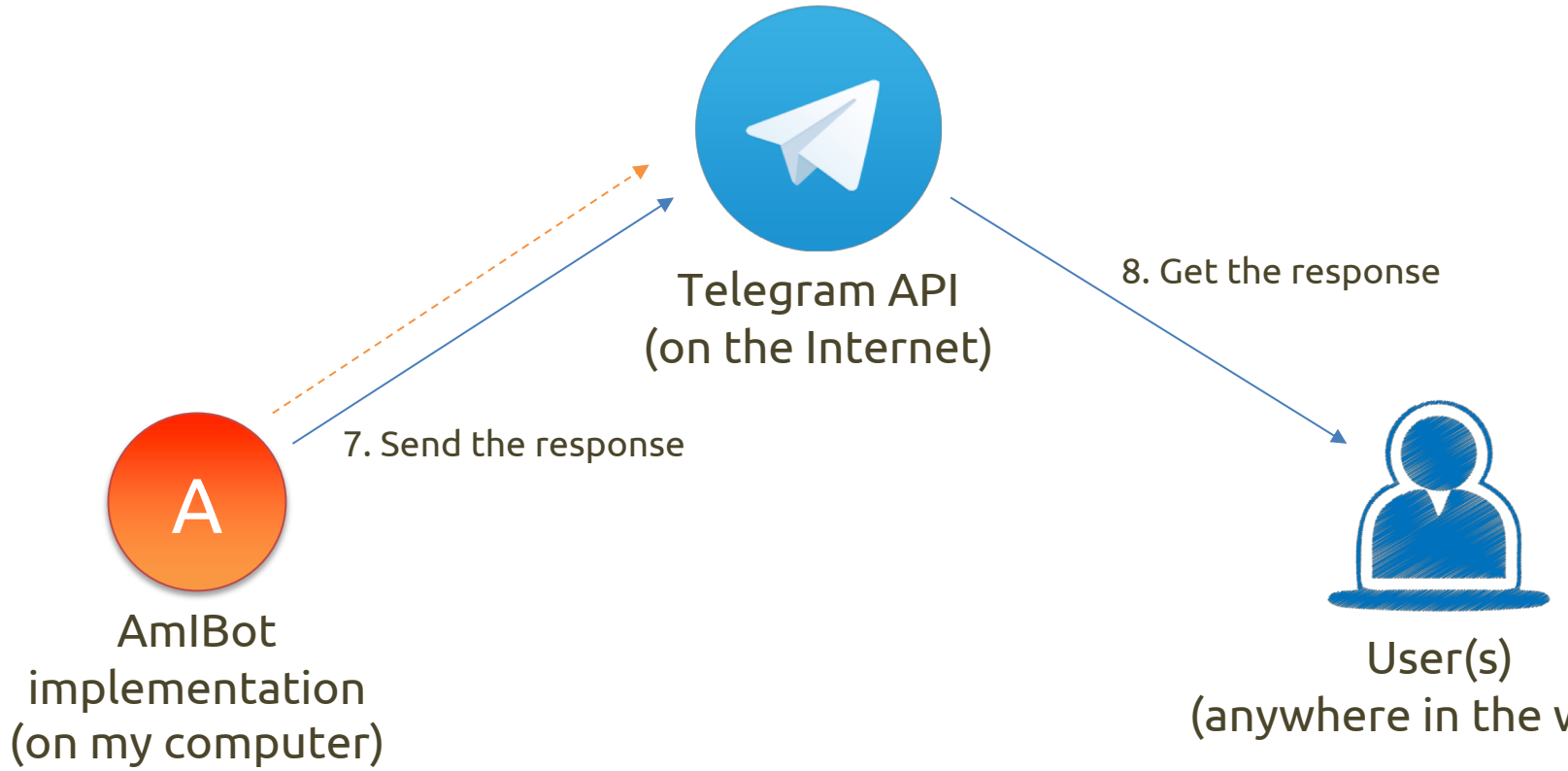

(from 10,000 feet…)

Which library do we choose?

- No official Telegram library for Python
- Four libraries are "recommended" by Telegram…
  - python-telegram-bot
    - https://github.com/python-telegram-bot/python-telegram-bot
  - Telepot
    - https://github.com/nickoala/telepot
  - AIOGram
    - https://github.com/aiogram/aiogram
  - twx.botapi
    - https://github.com/datamachine/twx.botapi
- Sometimes, other libraries may be widely used in tutorials and examples
  - e.g., by searching with Google

Which library do we choose?

- All the libraries
  - support Python 3
  - are available on pip
  - have some sort of documentations
- How can we choose?
  - python-telegram-bot and AIOGram are actively maintained
  - python-telegram-bot has more commits/stars/forks/watches… than the other three
  - AIOGram is Python 3.7+, *only*
- Let's go with **python-telegram-bot**, then!

Command vs non-command messages

- Command messages
  - e.g., /start, /edit, /something
- Non-command messages
  - free text messages
- We want to send greetings with the /start command message
- While the "echo" operation will be performed on every non-command message

The Text-To-Speech dilemma

- How to convert a text into speech?
- Online services exist
  - e.g., Google Text to Speech, VoiceRSS, …
- We will use the gTTS Python package
  - https://github.com/pndurette/gTTS
  - available on pip
  - it takes some text and, by using the Google Text to Speech API, return a mp3 file
- In our bot, we will send the mp3 back to the user
  - as a parrot (*vocal echo*)

Playground

- If you want to experiment more, you can…
- … perform an "inverted" echo
  - e.g., the user write "hello, bot" and the bot should reply with "olleh, tob"
- … ask for the weather
  - e.g., https://pypi.python.org/pypi/yahooweather

Questions?

01QZP AMBIENT INTELLIGENCE

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