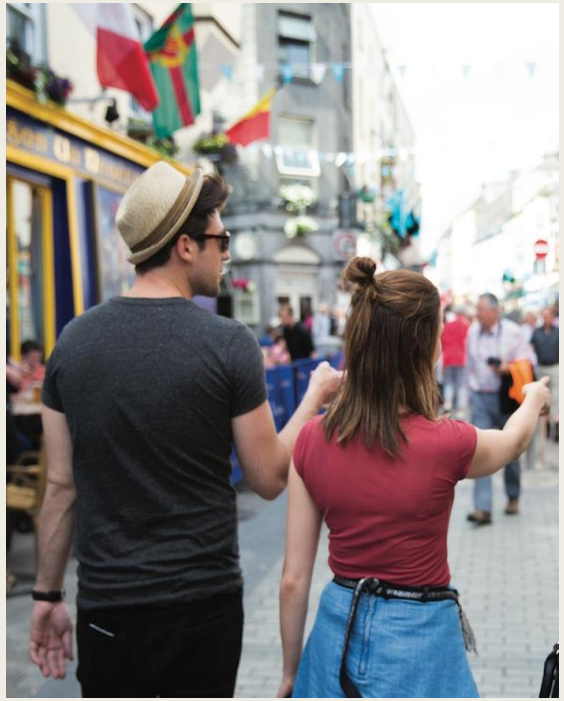
«κῦδος»: smart and talking city assistants

The need for «κῦδος» in our city

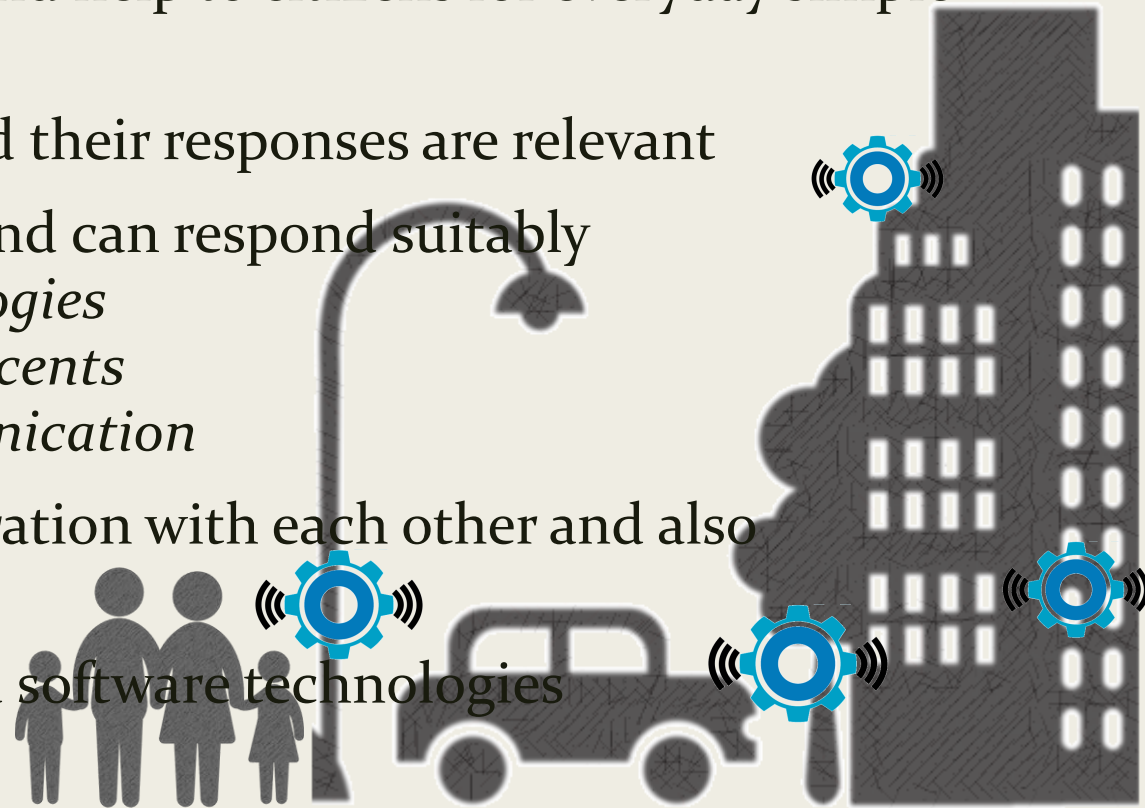
- We move in the city as citizens, consumers, visitors




- Frequently we need help in
  - *Small, simple and repeated issues*
  - *Unpredictable situations*
- In both indoor and outdoor places

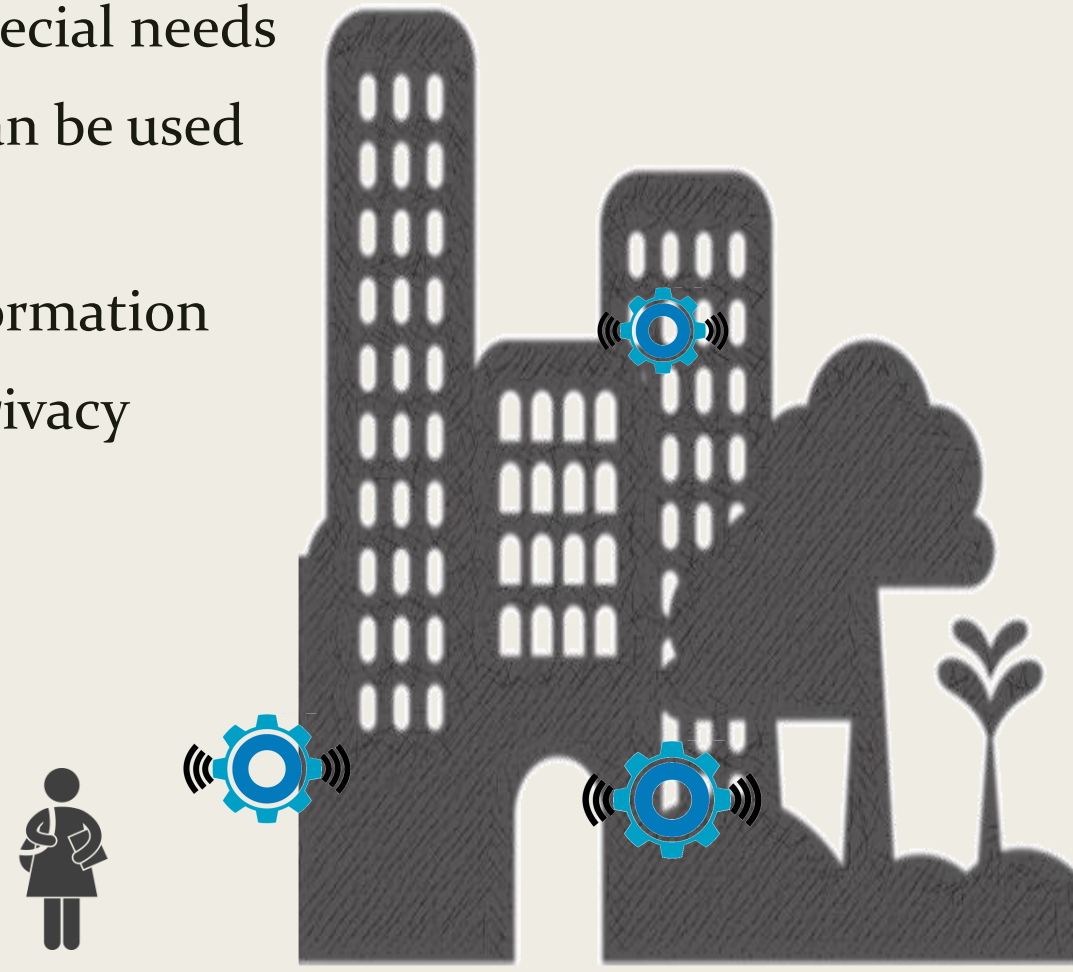
Our proposal: «*κῦδος*» *system*

- It consists of small devices that citizens can communicate using simple voice commands
- The devices are installed in many places in a city: bus and metro stations, public agencies and building
- They provide useful information, support and help to citizens for everyday simple or complicated questions
- They are aware of their specific location and their responses are relevant
- They understand human communication and can respond suitably
  - *They use Artificial Intelligence technologies*
  - *They support various languages and accents*
  - *They provide a sense of human communication*
- They can function autonomously, in cooperation with each other and also through centralized control
- They use mature open source hardware and software technologies



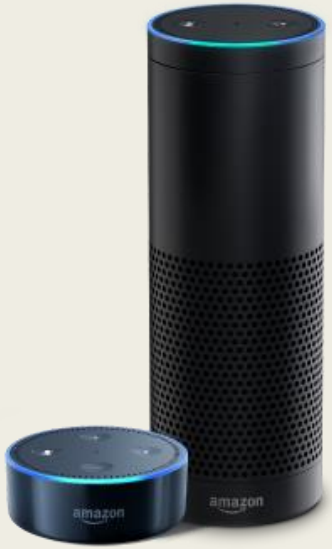
Benefits for city and citizens

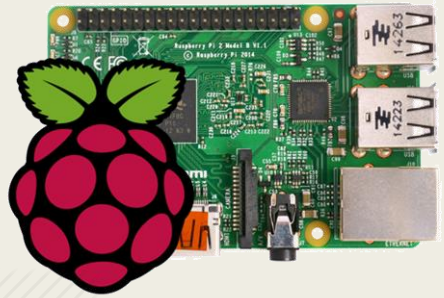
- Simplification of the way the information is provided to the citizen
- The relevant information is provided, through natural communication
- Can help all kinds of people with or without special needs
- Frees up useful and educated personnel that can be used for more important tasks
- Reduces the need for search of very simple information
- Serves without discriminations and respects privacy
- Is very flexible regarding the services provided
- Is very cheap and easy to install

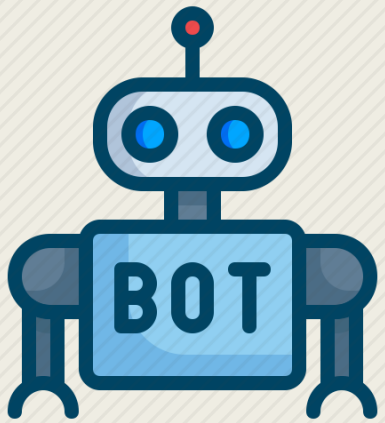


Technological Maturity

- Virtual assistants are becoming very popular and people learn to use them
  - *30,9 million smart virtual assistants sold in 2017.*
  - *Google (Google Home), Amazon (Alexa), Apple (HomePod)*
- Small, low cost computing devices
  - *Raspberry Pi 3 Model B+ costs ~50E, Raspberry Pi Zero costs ~5E*
- Mature artificial intelligence technologies to create chat-bots, to understand communication in various languages and for speech-to-text and text-to-speech conversion:
  - *IBM Watson™ Conversation service, IBM BlueMix Speech-To-Text and Text-To-Speech, Google Speech-To-Text and Text-To-Speech*
- Ability of centralized control (fog/cloud tecnhologies)
- WiFi or mobile networks
- Wide range of power supply capabilities
- Easy and rapid app development

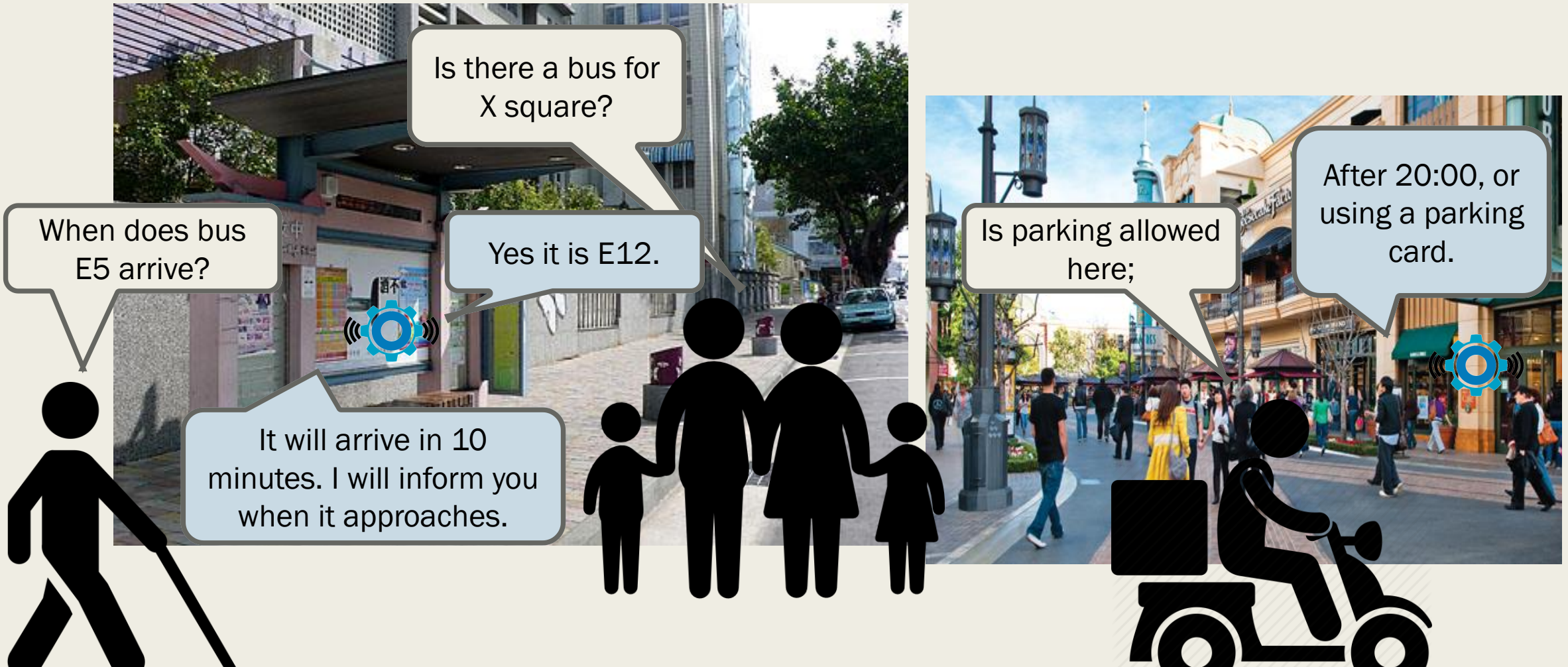






Use case I – Moving in the city

- Supply of useful information and guidance

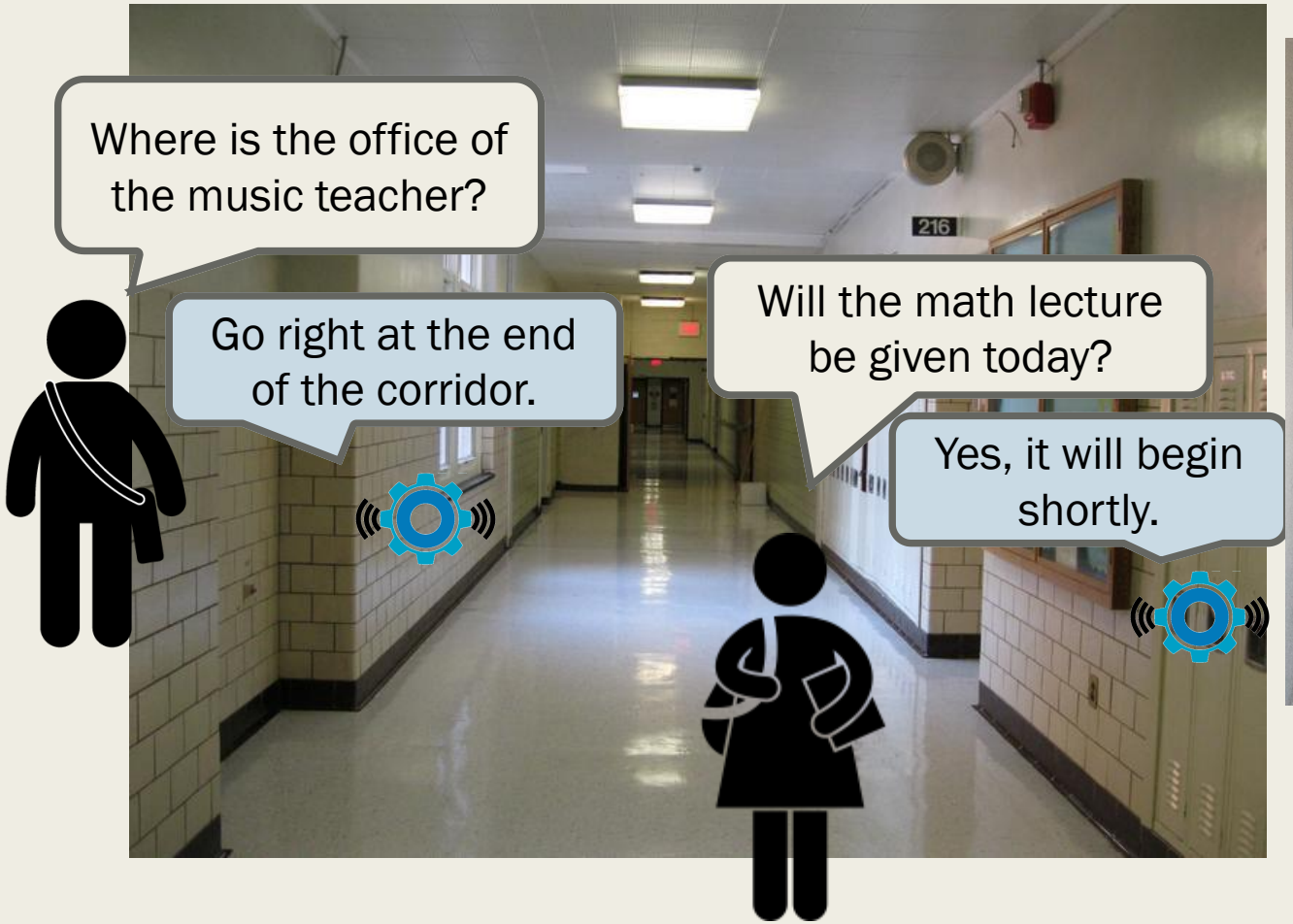


Use case II – Archaeological/Tourist place

- Provide historical facts, useful information and operating rules

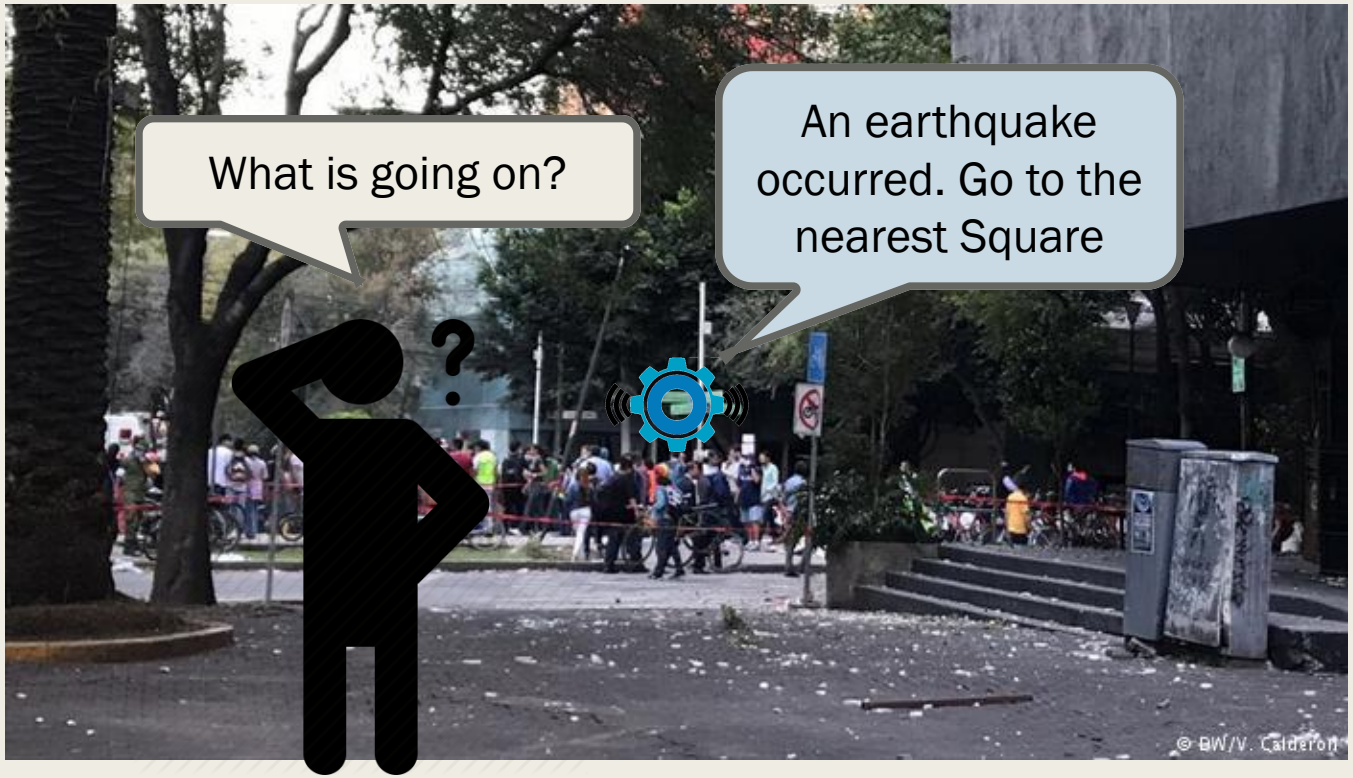
Use case III – School/Administration

- Provide information regarding the location of offices, timetables etc



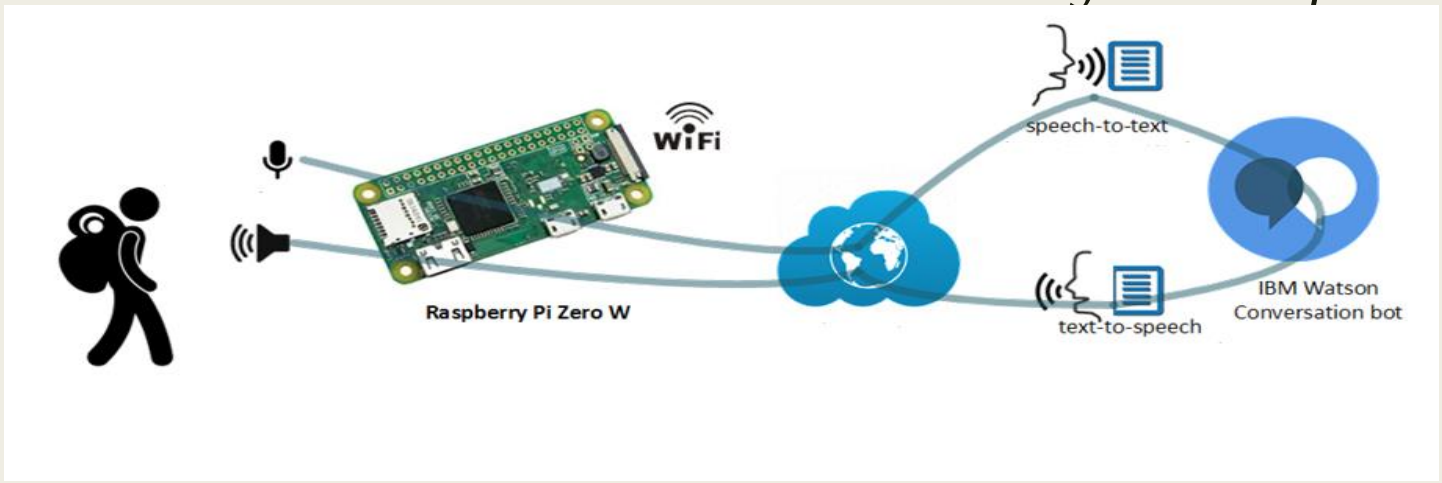
Use case IV – Emergency situations

- Addressing dynamic and emergency situations



«κῦδος» System

- *There are available mature technologies to implement the system*



- *A query is recorded using a mic connected to a small computing device (eg Raspberry Pi)*
- *Data are transferred through the Internet to a speech-to-text service*
- *A chat-bot service is used, eg IBM Watson Conversation bot*
- *The answer is provided following the reverse direction*

- *Small cost in case of device damage or loss*
  - *Estimated hardware cost ~15 Euros*
- Wide range of useful use cases
- Tangible benefits for the city and citizens
  - *In social and economic aspects*

- Note.: *κῦδος = glory in Greek but also kudos = the praise and honor given for an achievement*