

Piattaforma Fabbrica Intelligente - Regione Piemonte

# Progetto “HuManS”

## Human centered Manufacturing Systems



HuManS

Voice recognition

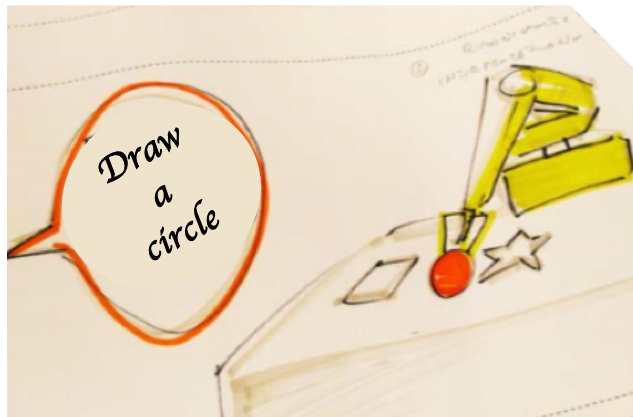


Automatic work-space



Collaborative work-space

### Macro-level interaction



Collaboration request



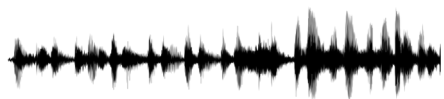
Emergency situation

# THE INTERPRETATION PROCESS



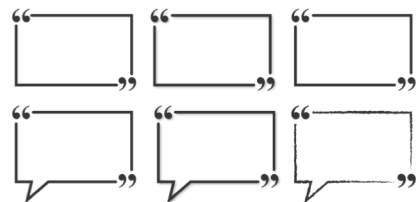
Connection phase

User connects to the robot  
- Secure authorization made via  
passphrase, biometric, etc.



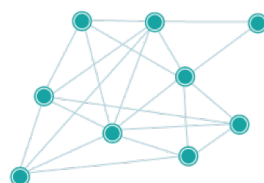
Voice acquisition &  
treatment

Filter the voice (300 Hz - 4KHz)  
Clean up background noise  
Eliminate eco/reverb



Speech-to-text

SDK Dragon system (Nuance)  
Transcription  
Extend vocabulary  
Speaker dependent/independent  
Immediate reaction to emergency comments



Semantic analysis

KotlinNPL technologies  
Open source  
Quintetto community membership

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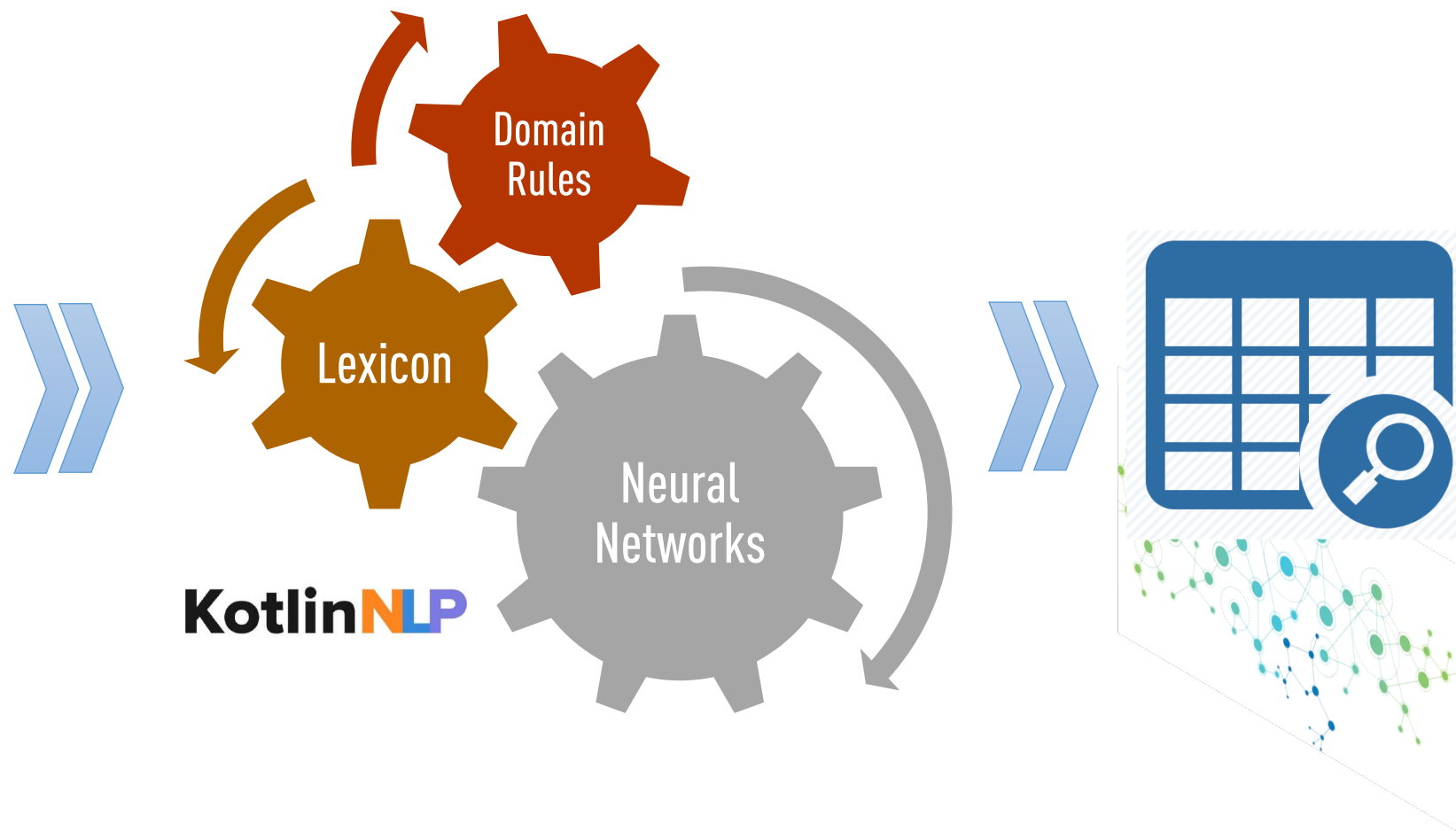
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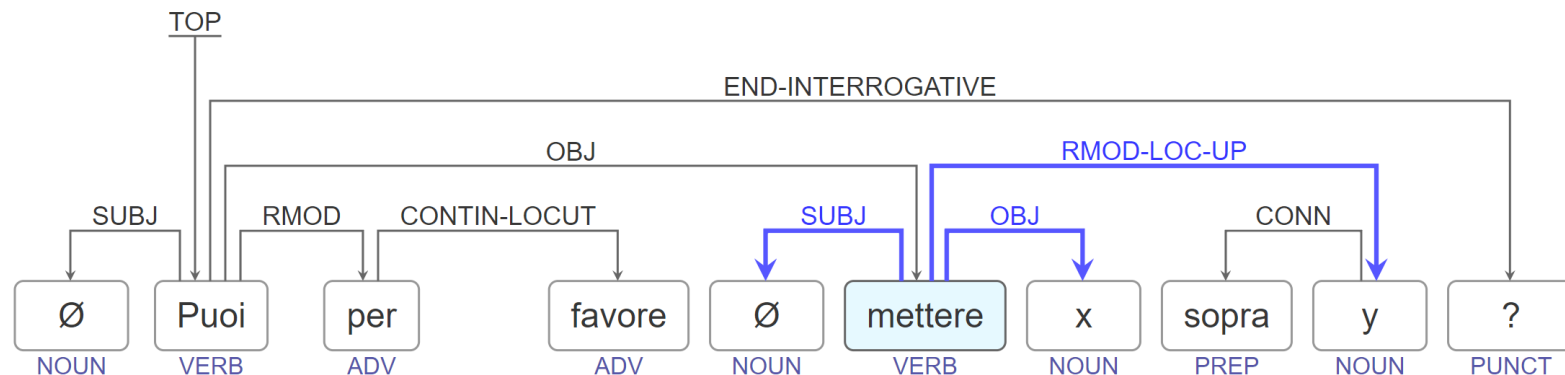
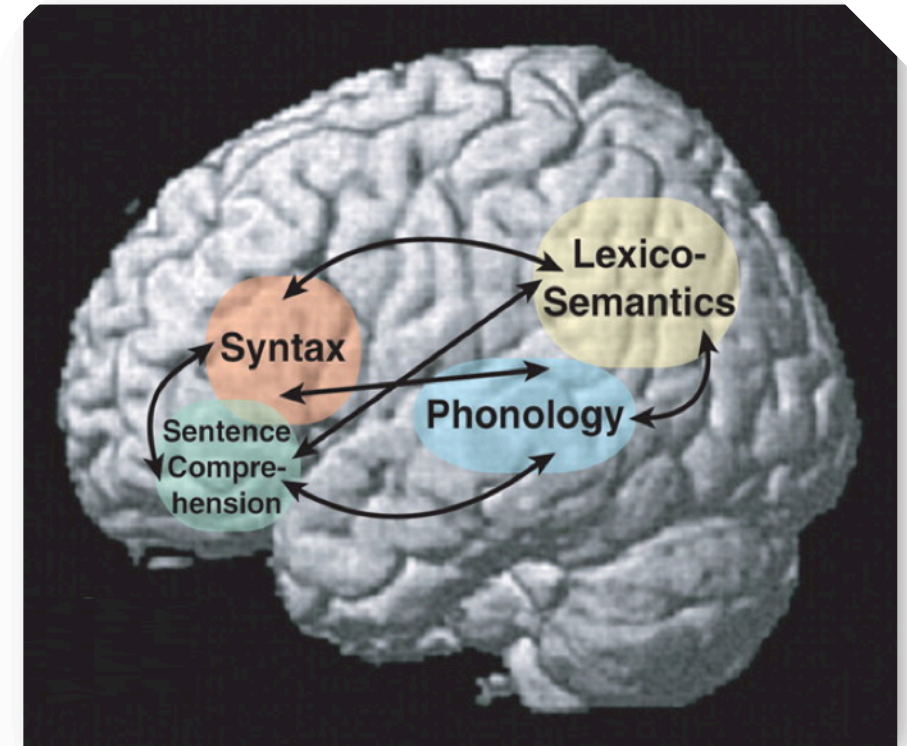
յուս քօրտէ եւ լինիչ նորոյ նշանոյ՝ բունն  
լի տեսերեցաւ ու հոխարեւ աշխ քաջ  
համայնօր հասկընդ։ Դրոյ շուրջ իսկ քօր  
հայրեն յայտառ քթօրէ մէջ ու սլովոնի եւ  
հայր նզ նորոյն ապագայ՝ ծննդ քաղաք  
հազար ու քթօրէ եւ քթօրէ առնալ սլովոն։ Ըն-  
գետն ընդ՝ քթօր հո համայնօր տեսնել նորո-



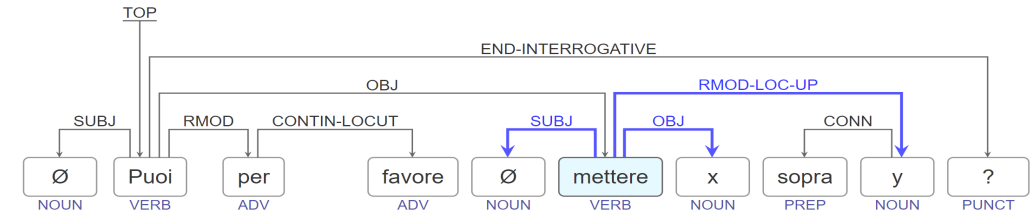
- Part-of-speech tags (noun, verb, adjectives, ...)
- Grammatical properties (gender, number, mood, tense, case ...)
- Lemmatization (e.g. Spostalo → Spostare + Lo)

- Syntactic dependencies (subject, object, complements)
- Subordination and Coordination

- Semantic roles (Agent, Instrument, Cause)
- Entities (object, locations, places, persons, ...)
- Frames (time, movement, ...)



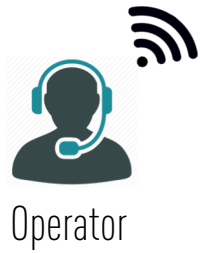
# SEMANTIC ANALYSIS TO COMMAND INTERPRETATION



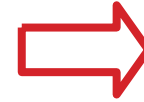
```
((LASCIARE ?X SOPRA ?Y)
:preconds ((?x stare-in ?z) (non ?* stare-sopra ?y) (?z messo-sopra ?y))
:effects ((?x stare-sopra ?y))
:remove ((?x stare-in ?z) (?z messo-sopra ?y))
)
```



Human Operator



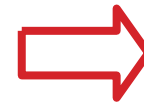
The interpretation  
process



Connection  
Voice acquisition & treatment  
Speech-to-text  
Semantic analysis



Perform  
execution



Transcode from human to machine  
language



## ABOUT



Founded

2005

Aosta Valley

Originally founded as an R&D company having received millions of Euro's in grants for their excellence resulting in Quintetto solving complex technical challenges for their customers.

Transformation

2017

To a pro-active global sales organization

Quintetto is growing rapidly in terms of revenues, employees and new customers. A renewed focus on multimodality, mixed reality and real-time audio/video services.



The five modes of communications

We develop today what everybody will use tomorrow

# **Thank you for your Attention!**

For further information please contact:

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