

Virtual Assistant for the Dynamic Assessment of Well-Being

The need

Maintain the autonomy of elderly people so that they do not have to be institutionalized and can remain in their homes as long as possible.





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THE PRODUCT

From Occasional Dependency Assessments...

AN OLDER PERSON IS AT HOME

A group of health professionals assess their health once or occasionally



Initial Assessment



- Dependency level
- Carried out by professionals
- Create the Individual Care Program

"Ad-hoc" Assessment



- At request of dependent person
- By Department of Social Action of Biscaia Province
- Update Individual Care Program

Periodic Monitoring

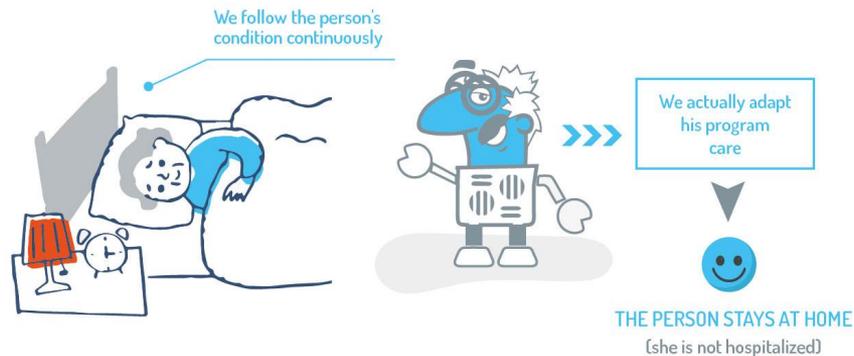


- No periodic information on evolution of dependent
- First signs of decline in well-being not easily detected
- Preventive measures not necessarily implemented to limit institutionalization of dependent.

...To a dynamic and regular adaptation of the social and medical resources...



AN OLDER PERSON IS AT HOME



Periodic Monitoring



- Frequent and regular assessment of well-being of dependent
- Rapidly detect changes situation and propose/send alerts
- Propose modification to the Individual Care Program
- Prevent unnecessary institutionalization of person

...by Staying close to the well-being status of the dependent...

Option 1

“IOT Everywhere”

- Expensive to install
 - Complex
 - Intrusive



Option 2

“Exhaustive Questionnaire”

- Time consuming
 - “Boring”
- Cannot be frequent



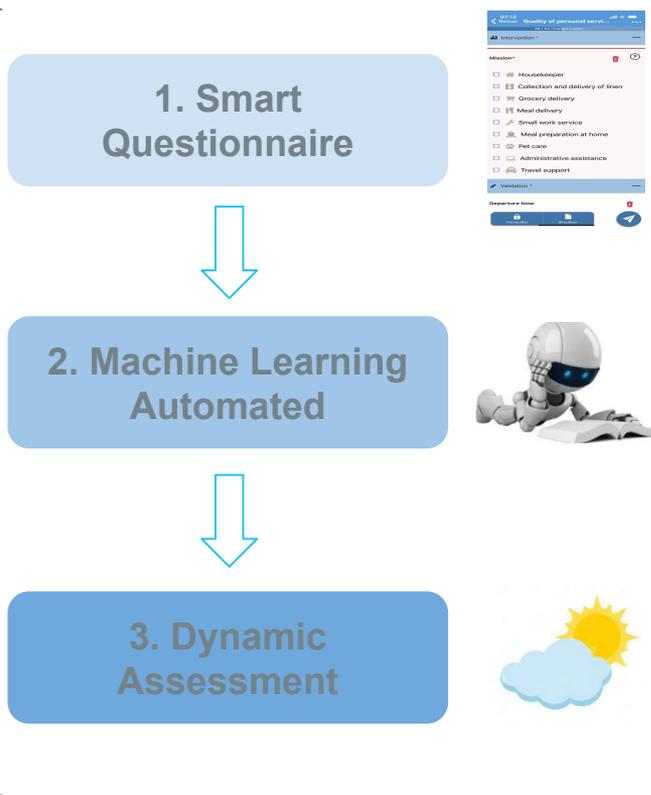
Option 3

“HUPI Smart Questionnaire”

- Quick
- Entertaining
- Frequency adjusted



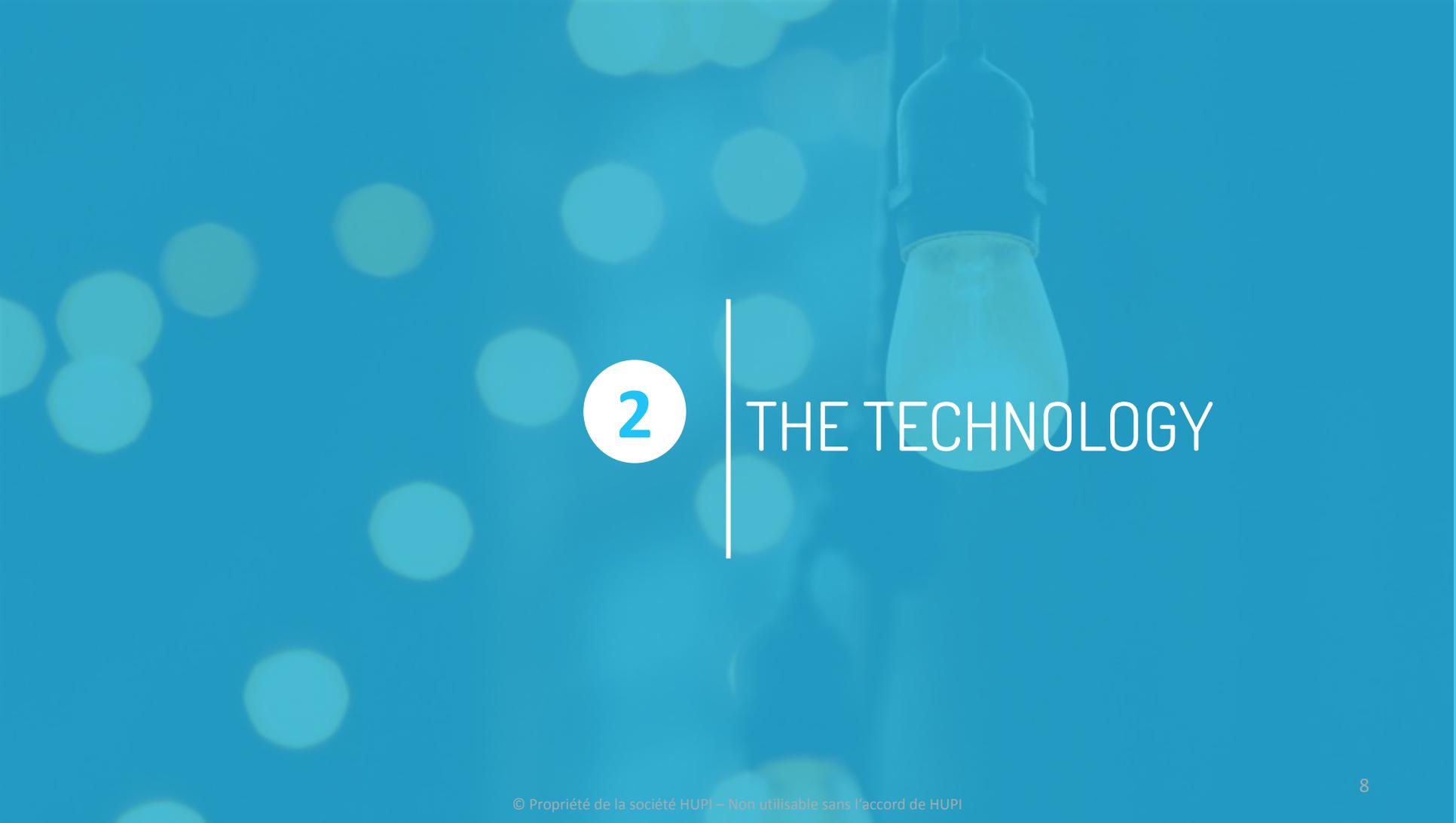
... thanks to HUPI Virtual Assistant for the Dynamic Assessment of Well Being.



- Frequency of requests based on past assessments
- Dynamic Selection of Questions : 3-5 per request
- Gamification integrated
- Multi-user : dependent, caregiver, experts

- Questions Selection Optimization
- Prediction, Alerts and Recommendations
- Real-time automated processing

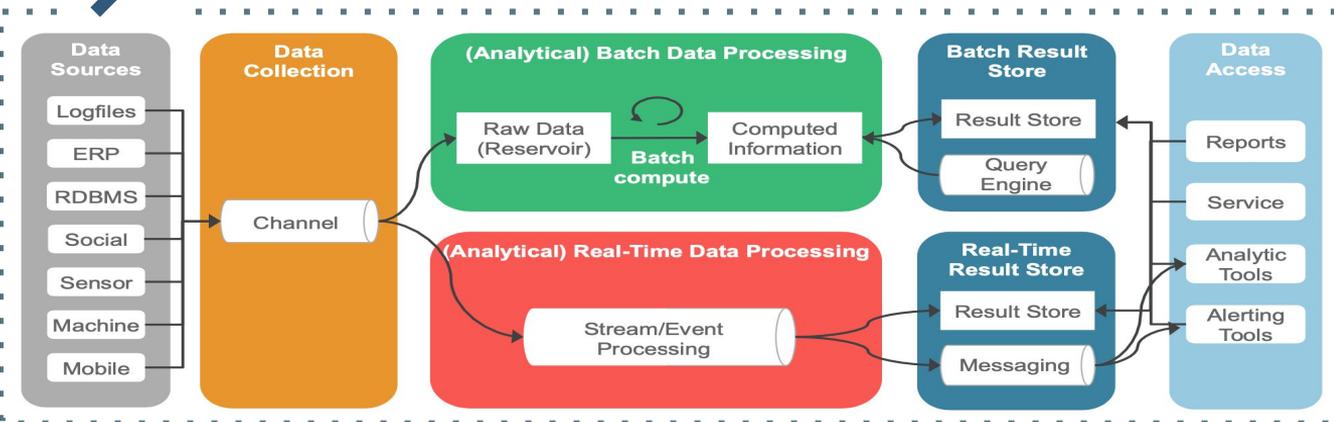
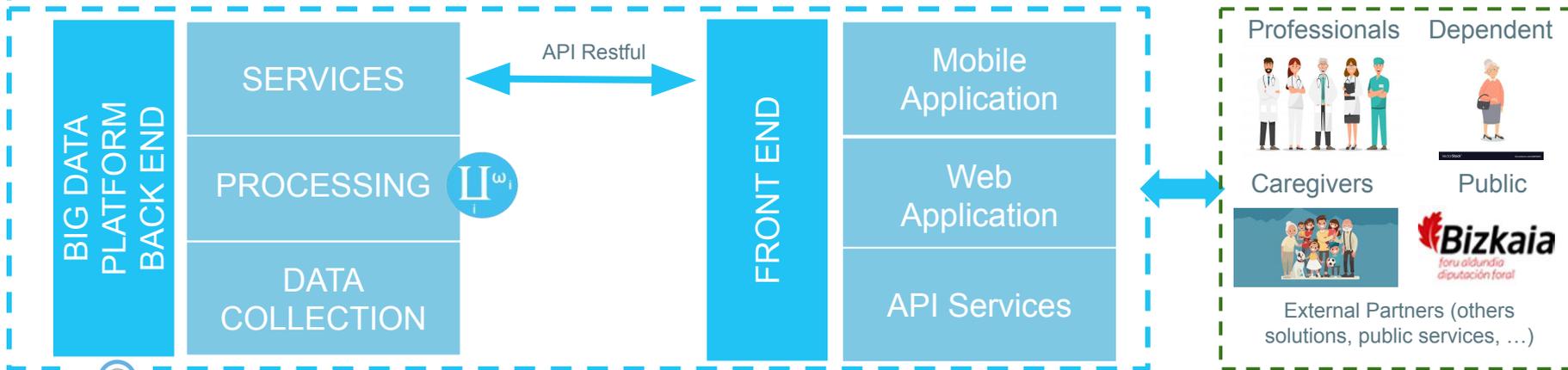
- **Today:** Dependent Status Daily Check
- **Past:** Status trends over time
- **Future:** Short-term prediction / Alerts
- Recommendations to update Care Plan (out scope)



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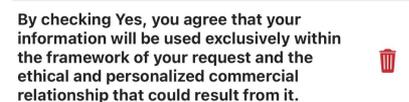
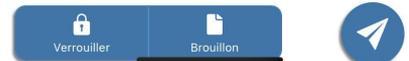
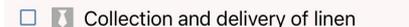
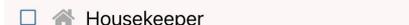
THE TECHNOLOGY

Overall Architecture



Focus on BIG DATA platform

1. Smart Questionnaire : Get Dependent's Regular Feedback



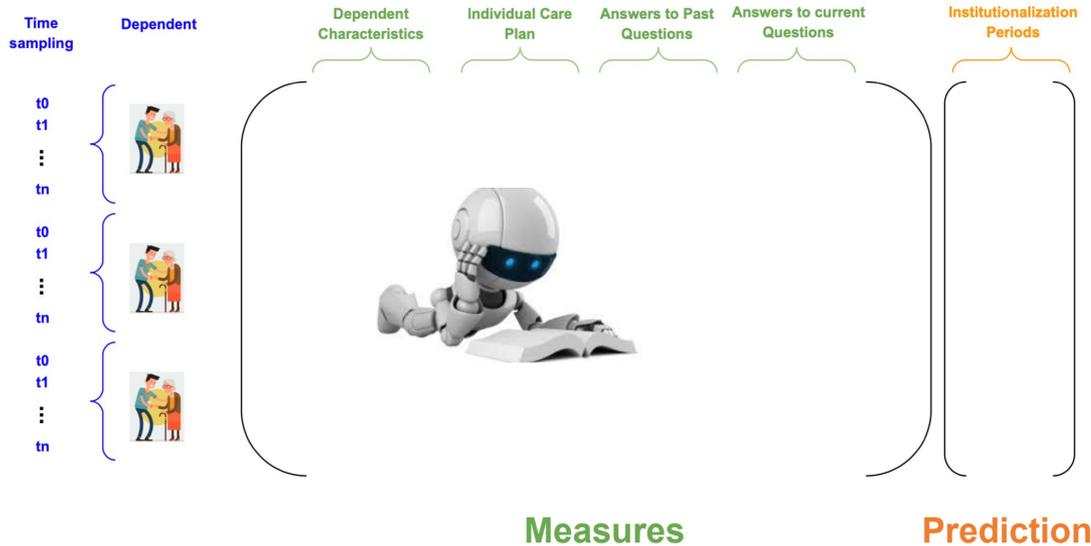
Smart Selection issued from a bank of 100+ questions, across a wide variety of medico-social themes, established with experts in this field*

* example : <https://www.inrs.fr/risques/psychosociaux/questionnaires.html>

2. Machine Learning ...



Innovation : What questions should I ask today, at the minimum, to predict, with the highest level of probability, the short term evolution of the dependent?



Supervised Machine Learning :

- Random Forest (decision tree) model with Mean Entropy Decrease
- LOGIT model with Wald statistics (Chi-2 law)

...and Automation

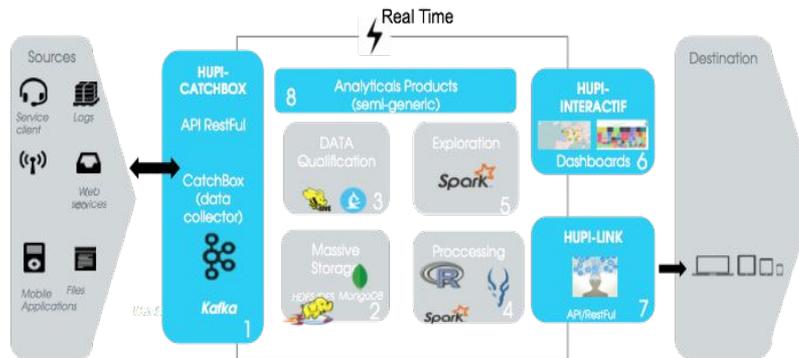


Advanced supervision monitoring :

- Services
- Workflows
- Infrastructure



GPRD Compliant
with our internal
DPO



HUPI Big Data Platform

- “State of the Art” technologies
- users connexions > 35 000 users/days
- Data flows : > 20 Go/days



Data Center highly secure + backup site

- 6 servers (96 cores, 1,8 To memory)
- SAN Full Flash 80 To, NAS 70 To
- Firewall (x2)
- Band Width 100 Mb/s

3. Dynamic Assessment : Past, Present and Future

Professionals



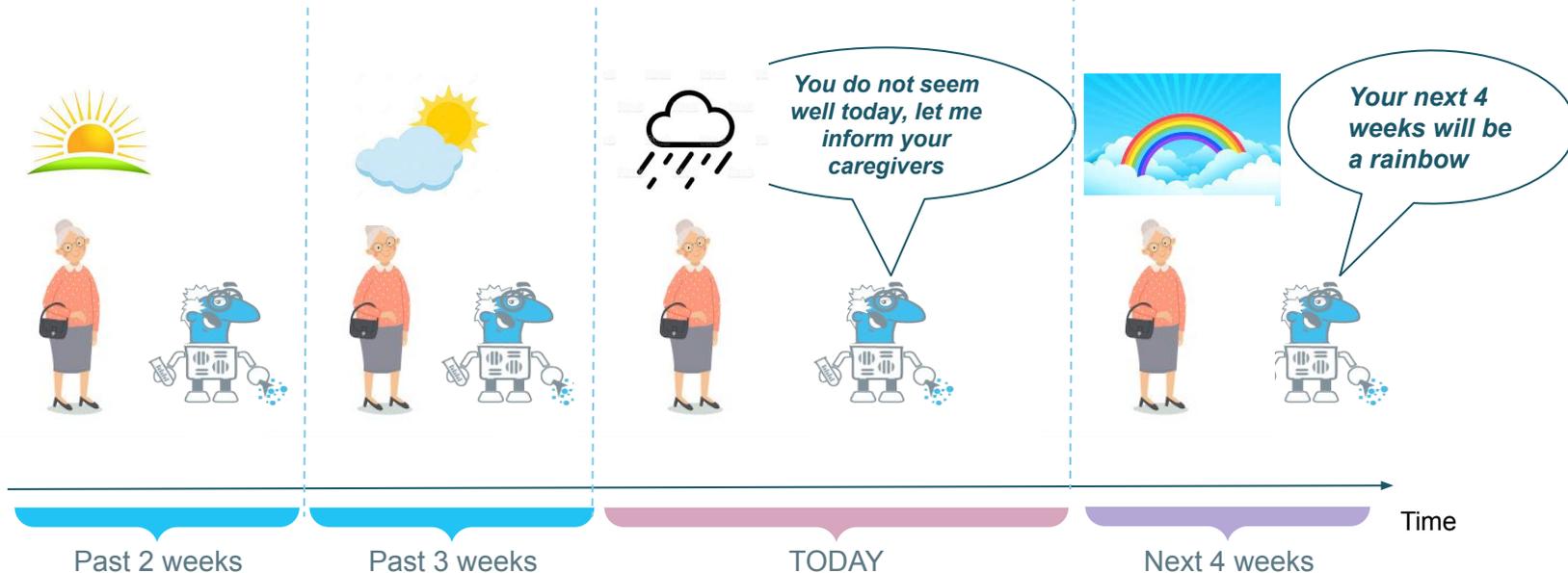
Caregivers



Public Services



Assessment over time : trends and predictions





3

OTHER BUSINESS APPLICATIONS

Business Applications



Virtual Assistant

To follow : professionals “highly” exposed

in order to prevent : Burnout, Stress, Psychological Distress

and to enable : Well being at Work



“Garapen ekonomikoa xedea baino gehiago baliabide bat dela uste du HUPIk”

“Le Développement Économique est un Moyen et pas une Finalité”

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