Integrating oral health into everyday life of elderly dependent people

With Oralien

NOMINATED

SOLUTION SilverEco® 2018

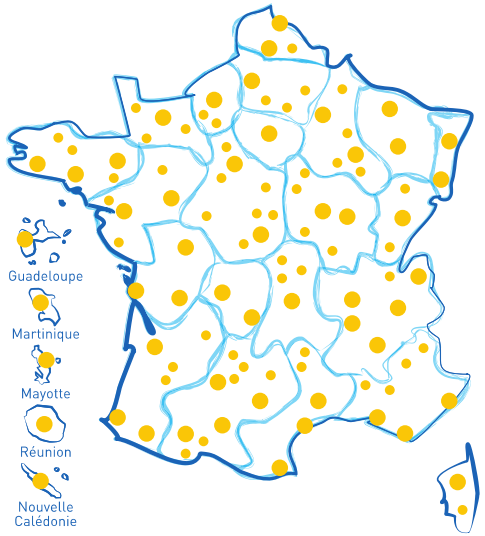
In e-health category

Trophées SilverEco 2018 - SilverNight.fr

The UFSBD, a major player in oral health

A reference association with a strong territorial network

- Association created in 1966 by the profession
- Official organization for preventive care and promotion of oral health in France
- WHO collaborating center
- Working with public agencies and proposing preventive strategies



- 1 national entity
- 13 regional delegations
- 101 local unions
- 15,000 dentists involved in public health in and out of their dental offices

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Providing access to good oral health for all

Access to oral health FOR ALL is a major issue requiring an approach which promotes social equity.

In oral health, good hygiene is a prerequisite for early prevention, for less intrusive care and reduced need for care.

It is therefore important to sensitize elderly people , and their families and to train the carers.

⟶ We have been developing these training actions for more than 20 years, associated or not with screenings, but today we want to go further.

UFSBD's vision for oral health

of dependent elderly people

Improving the everyday quality of life of elderly dependent people

Improving the oral health of dependent individuals by improving daily oral hygiene

Including oral health in the projects of the nursing homes, and, in the future, at home

- Staff training sessions
- Family awareness sessions

- Avoiding the dental care breakdown
- Detecting early care needs
- Training dental teams and mobilizing them to care for the elderly dependent people

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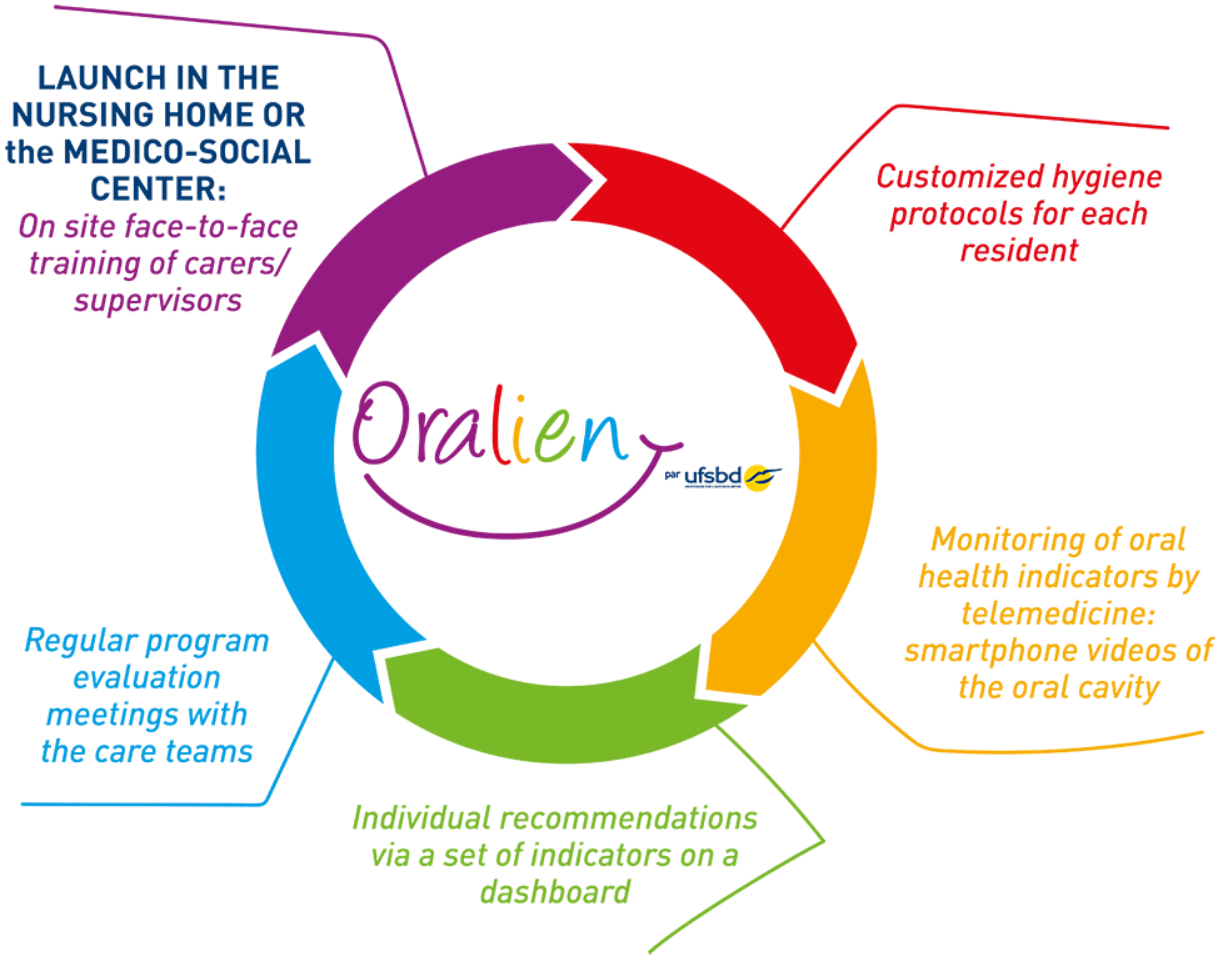
After more than 20 years of action
with dependent elderly people,
UFSBD wanted to explore the benefits of telemedicine …

The ORALIEN program

A comprehensive oral health management program for dependent elderly people

With Oralien, UFSBD relies on the opportunities of telemedicine and proposes to nursing homes **a comprehensive monitoring program placing oral health at the heart of their projects**



The different steps of the ORALIEN program

Staff Training : on site
1 day

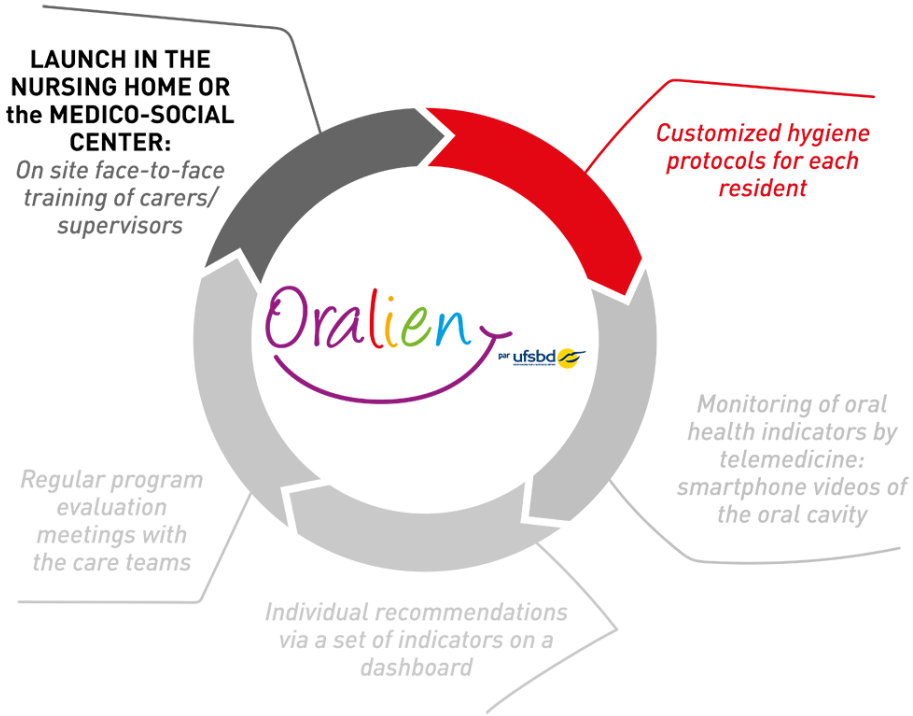
Healthcare professionals, nurses, carers, etc.

- 1 seven-hour day:
  - ½ day of theoretical and practical training (role-playing)
  - ½ day of practical training with study cases in rooms
- Maximum of 12 people

Objectives:

- Integrating oral hygiene into care provided by caregivers, and including oral care in the medical program of the nursing home
- Improving access to good oral hygiene and health for the elderly dependent people, through staff training
- Setting up customized oral hygiene protocols

The different steps of the ORALIEN program



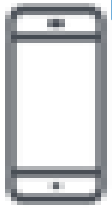
At the end of the theoretical training, customized oral hygiene protocols are developed as an example

Trained staff is encouraged to keep developing protocols for all residents, over time

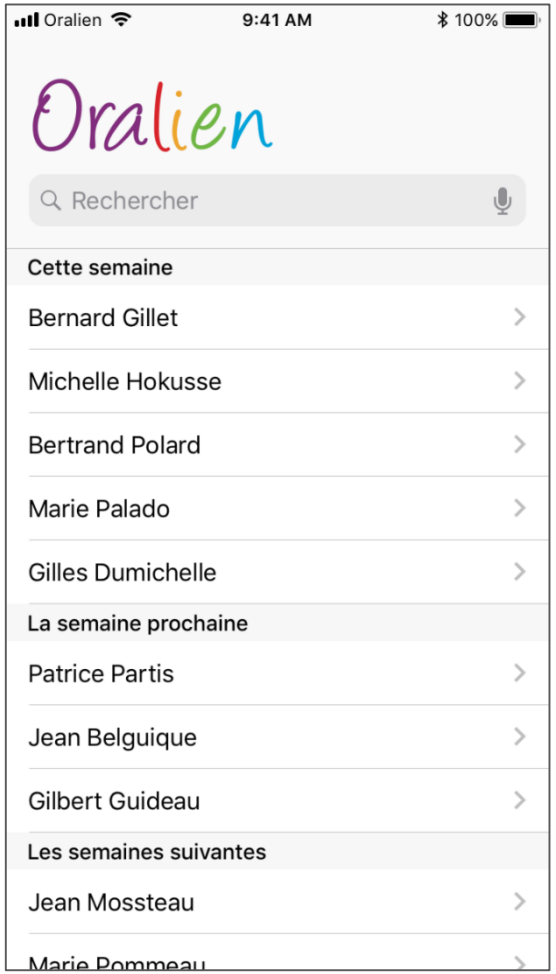
→ These protocols may be completed through data collected via tele-surveillance and the follow-up appointment at six months after training

The ORALIEN App

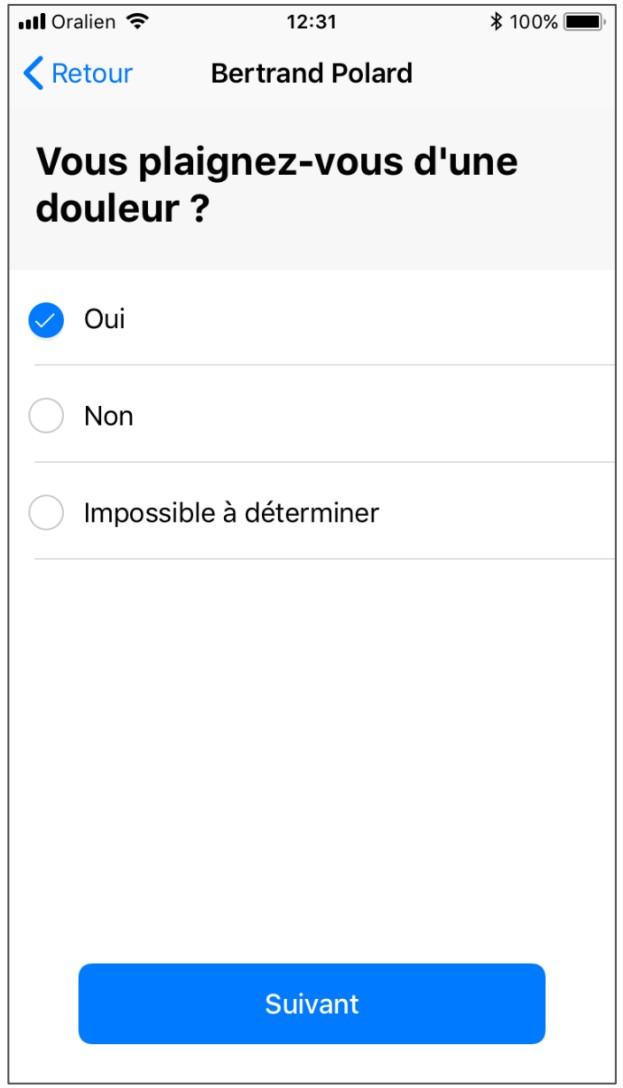
Smartphone provided to the nursing home



The list of residents who need the first scan



The referent answers several questions



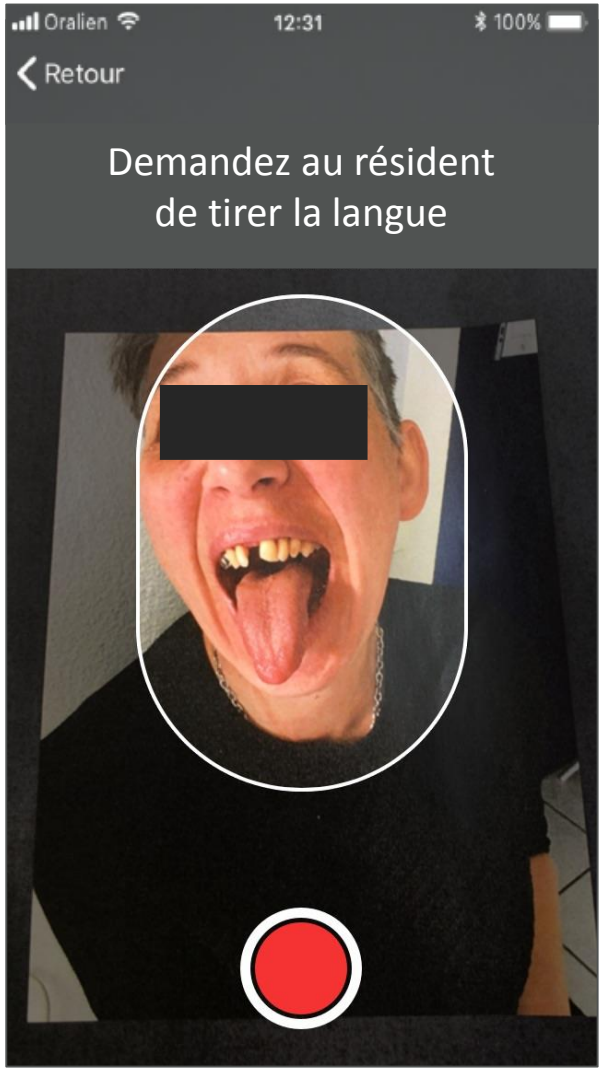
The data collected are:

- Anonymized
- Encrypted
- Hosted on a secure server

Now it’s time to take the scan

Appropriate mouth-openers are used for each patient

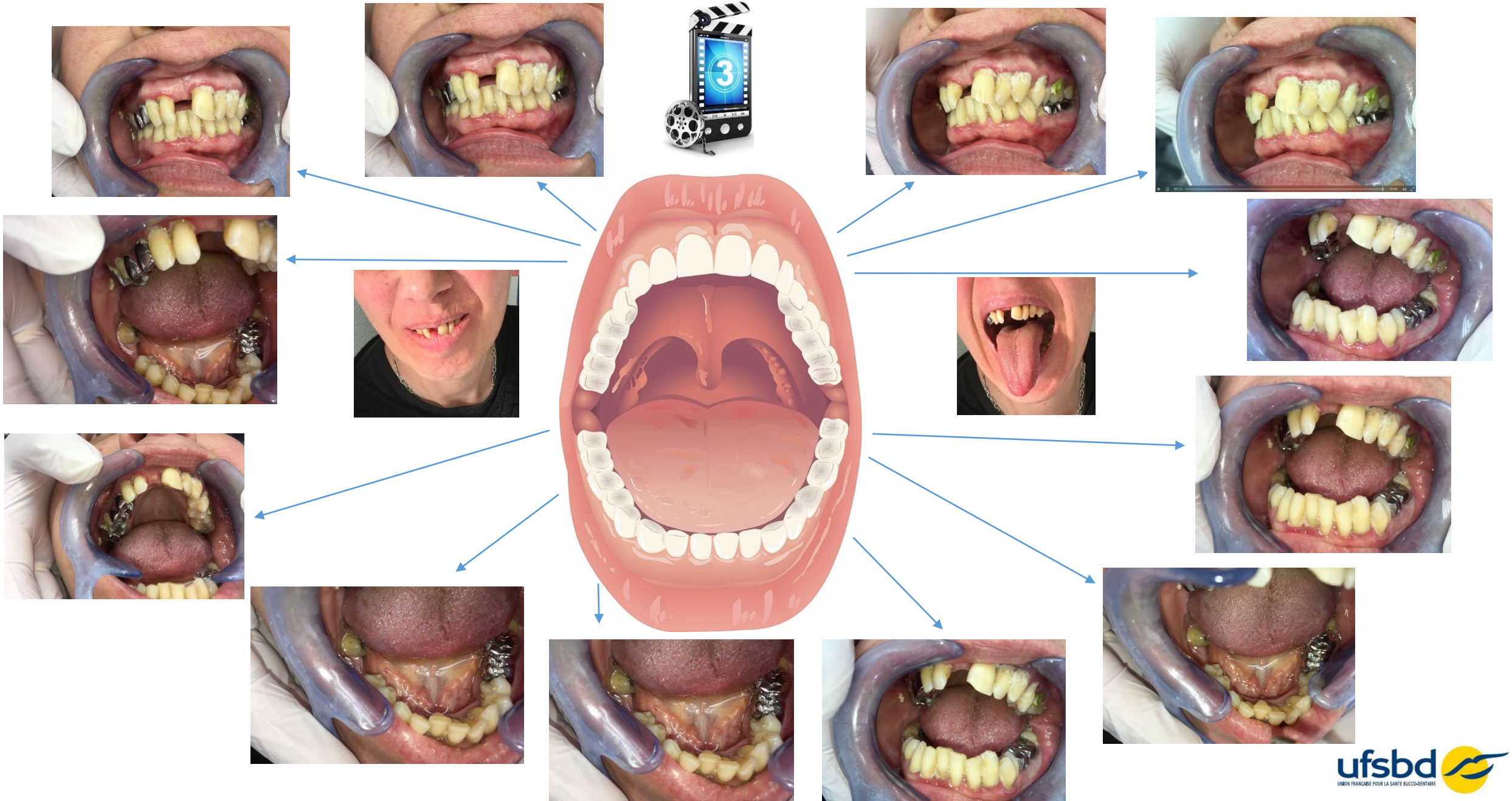
The referent performs the scan



➡ **The app guides the referent through each step of the scanning procedure**

➡ **After the scan, the data are transferred to the analysis platform, treated by artificial intelligence then validated by a dentist**

Video extracts managed by artificial intelligence – Case 1



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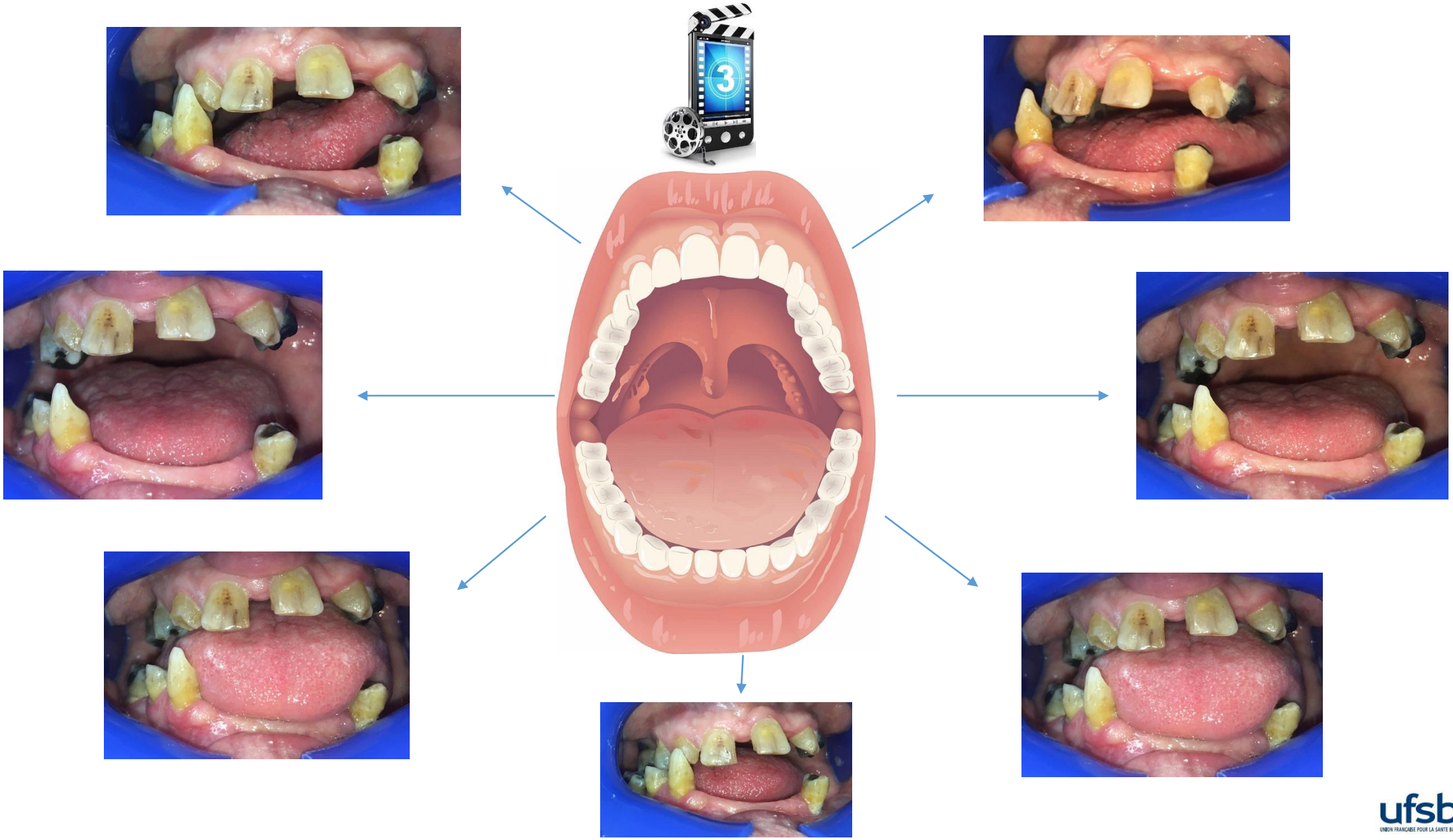
Video extracts managed by artificial intelligence – Case 2

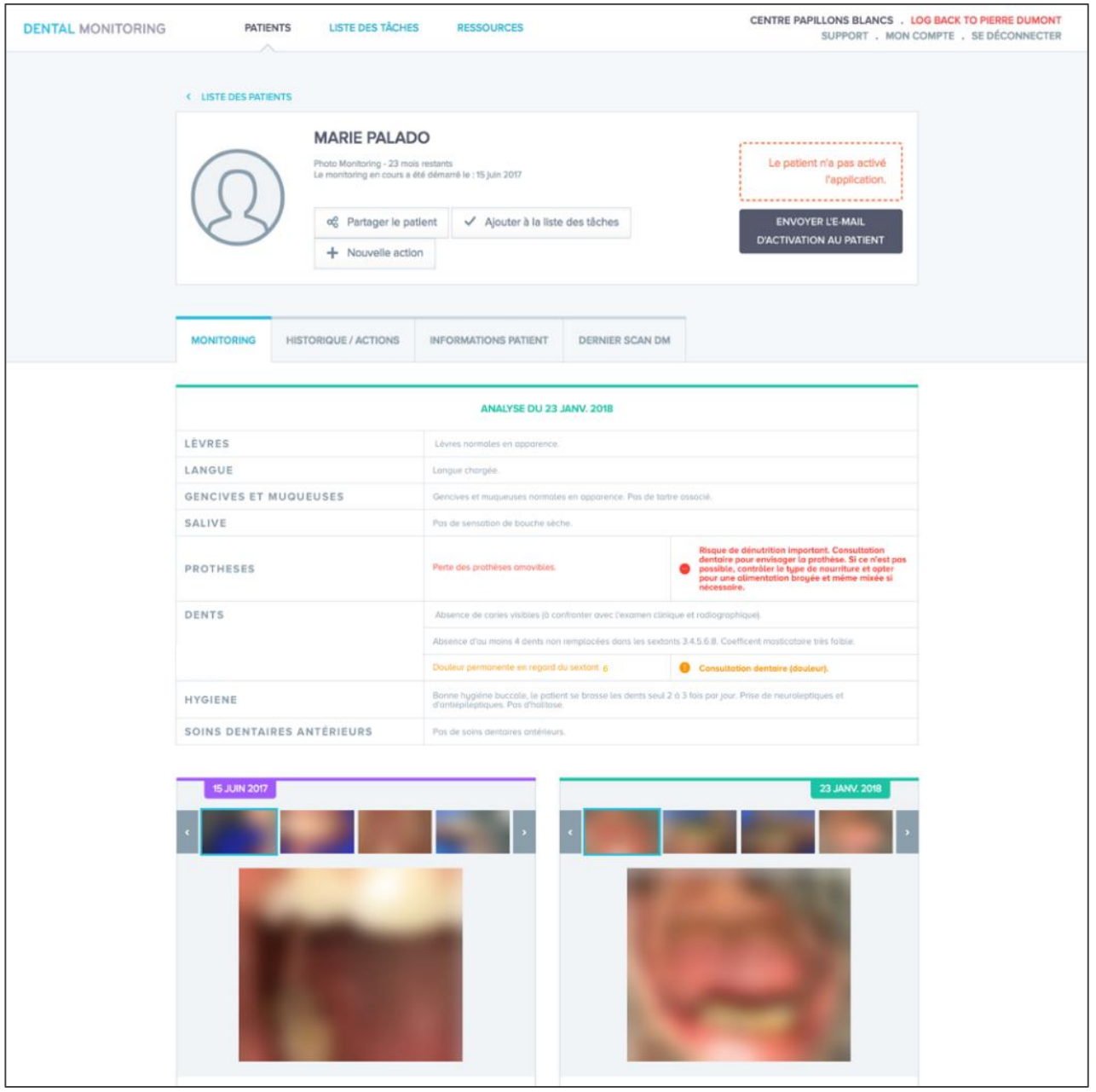


An ergonomic application that fits into the daily routine of care staff

Reception of the report on the interface

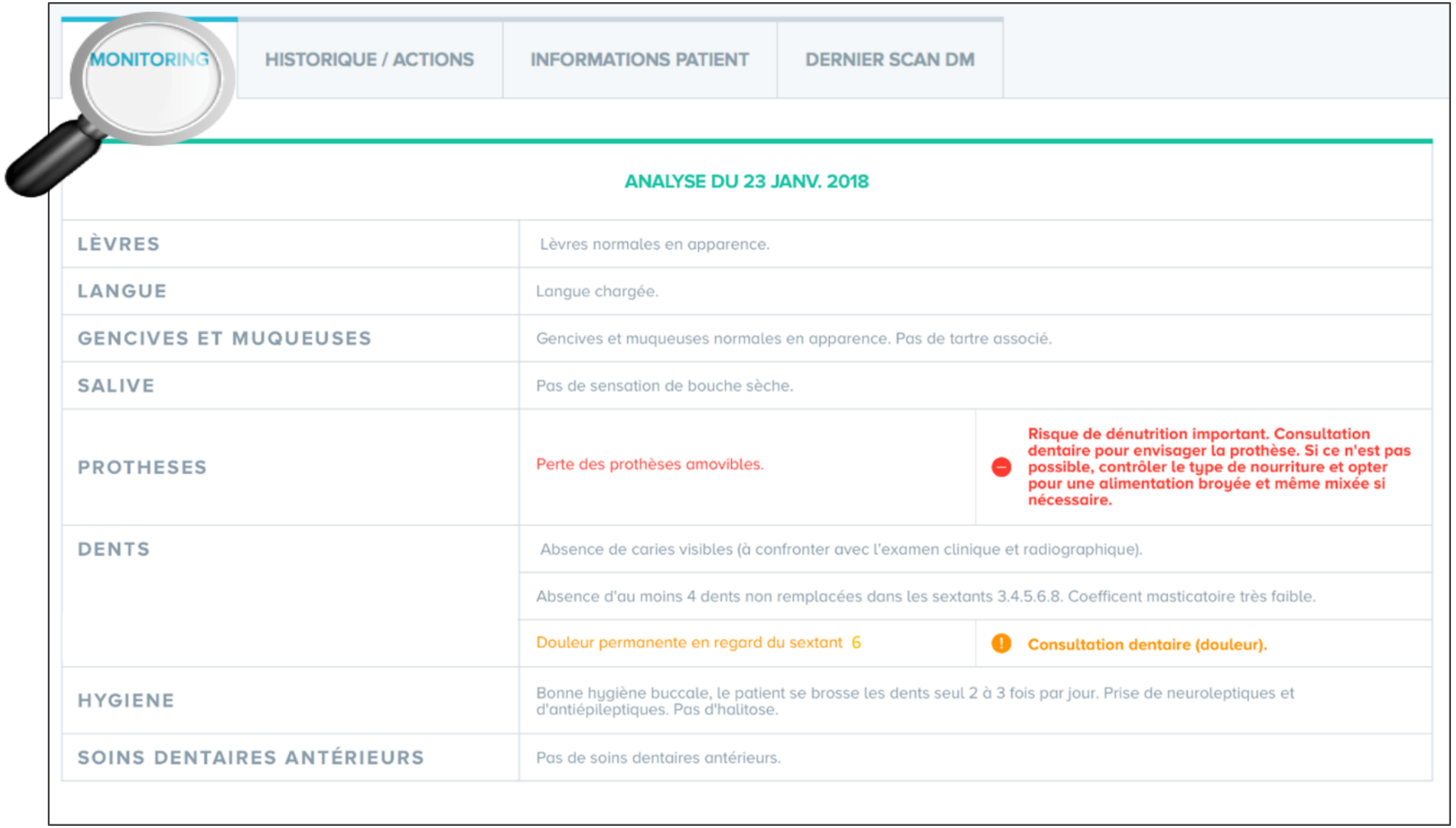
- The data are analyzed by algorithms and the results are checked by a dentist. Recommendations are then sent for each patient, accessible via the secure Oralien website

- Follow-up of indicators via tele-surveillance is planned for each resident twice a year, together with scans in "dental emergencies"

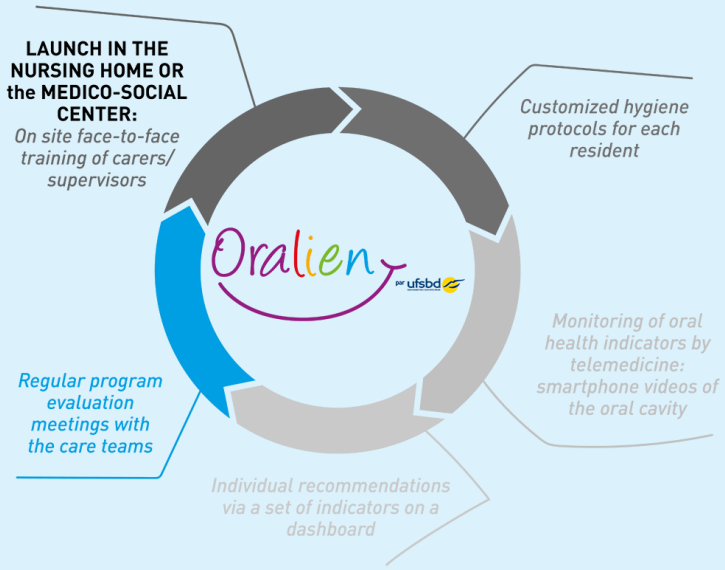


An ergonomic application that fits into the daily routine of healthcare professionals

Zoom on individual scan results and associated recommendations



The different steps of the ORALIEN program



Assessment appointment with the healthcare supervisor

An appointment is scheduled within the nursing home between the Healthcare supervisor or the referent and a UFSBD dentist, after the first 6 months of monitoring.

- Analysis and discussion concerning the recommendations
- Analysis of carer's practices adjustment
- Tips to improve the management of oral health of residents on a daily basis
- Support for the management of care in dental practice

The strenghts of the ORALIEN program

- **Integration of oral health** into the project of the nursing homes
- Oral health **management** in close collaboration with a dentist
- **Initial training of care staff and supervisors i**n the management of oral health, with annual top-up courses
- **Support of the care teams** throughout the program
- **Regular monitoring** and practical and pragmatic oral healthcare recommendations
- An easy to use program combining **human contact with algorithmic artificial intelligence**
- Optimized **oral healthcare monitoring** for a better **quality of life**
- The **identification** of **priority healthcare needs** for optimization of the care path
- **Secure data storage validated** by independent external firms.

Oralien

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Innovative...

Because it creates a link between the center or the nursing home and dentists

Innovative...

Through the maintenance of the link between patients and dentists

Innovative...

Through the alliance of proximity and telemedicine

Oralien par ufsbd

Oralien: a new program innovative in many ways

Innovative...

Through its ability to anticipate oral healthcare needs early

Innovative...

Because it helps and supports care staff on a daily basis

Innovative...

Through the set up and the adjustment of oral hygiene protocols

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ARTIFICIAL INTELLIGENCE

Deep Learning

COLLECT:

COLLECT A LARGE NUMBER OF CLEAN DATA.

LEARN:

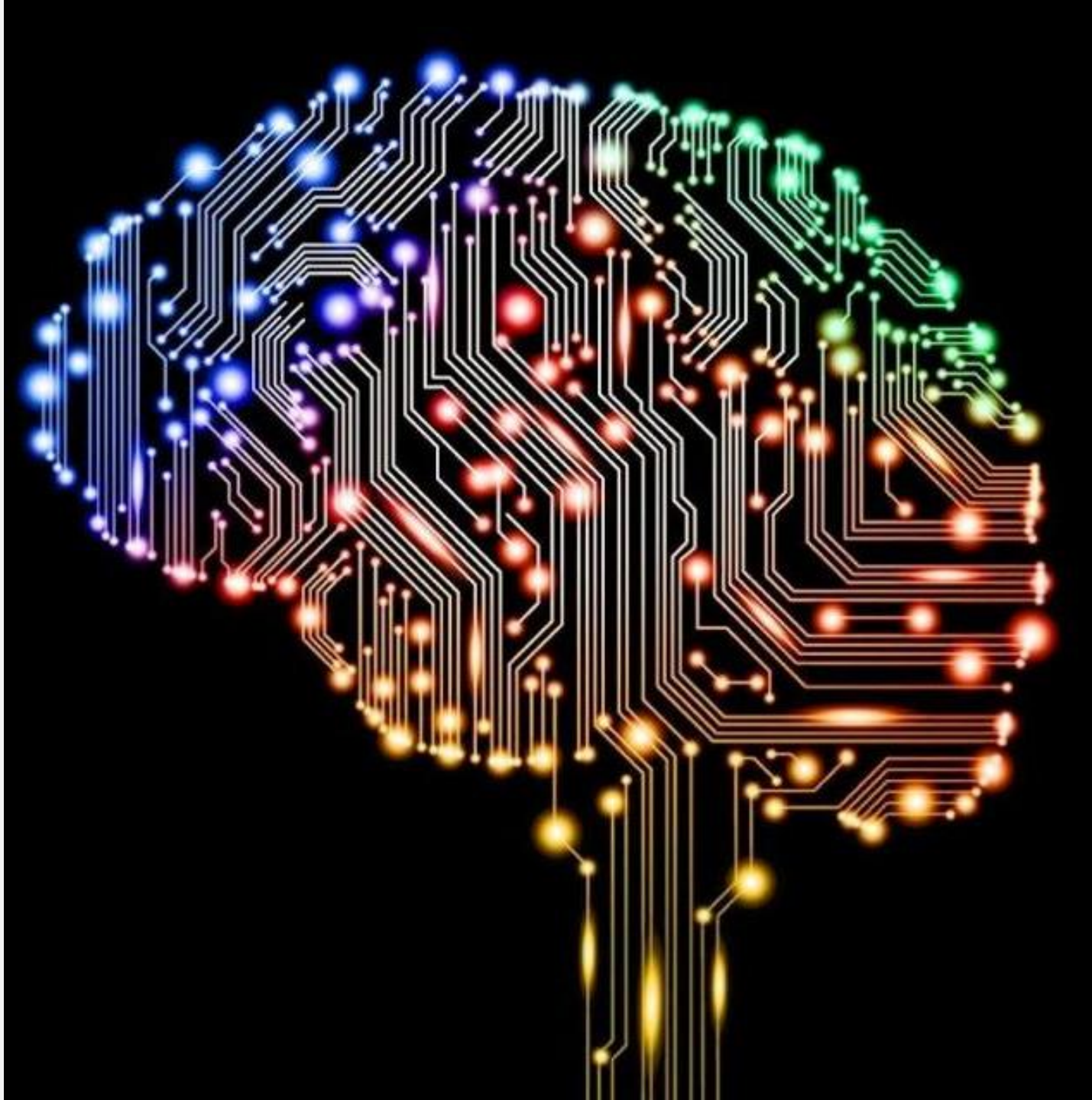
IDENTIFY ATTRIBUTES OR ELEMENTS, ASSISTED BY EXPERTS. (UNSEATED ALIGNERS).

BUILT:

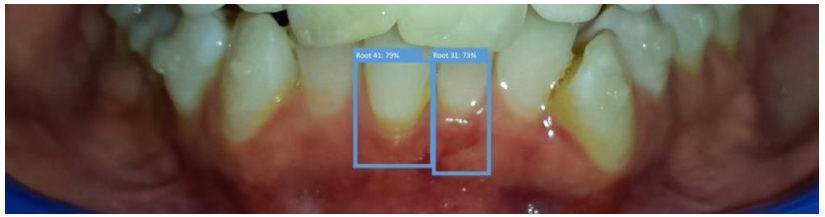
CREATE YOUR NEURAL NETWORK TO IDENTIFY RECURRING PATTERNS.

DETECT:

ATTRIBUTES YOU ARE INTERESTED IN SCORING.



Example of gingival recession early detection



Date: 10/12/2016
Slight recession
Detected on
31/41

Date: 24/12/2016
Slight recession
maintained on
31/41

Date: 21/01/2017
Slight recession
maintained on
31/41

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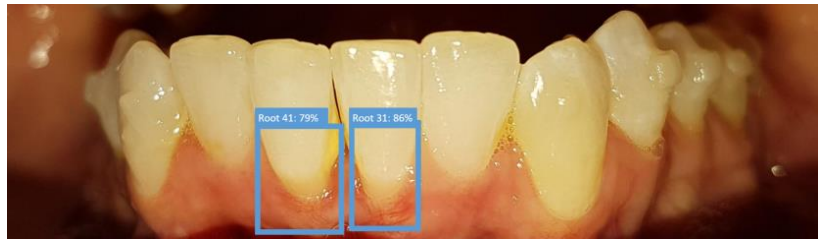
Date: 14/03/2017
Slight recession
maintained on
31/41



Date: 14/04/2017
Recession
Increased on
31
Maintained on **41**

Date: 08/05/2017
Recession
Increased on
31/41

Date: 22/05/2017
Recession
Increased on
31/41

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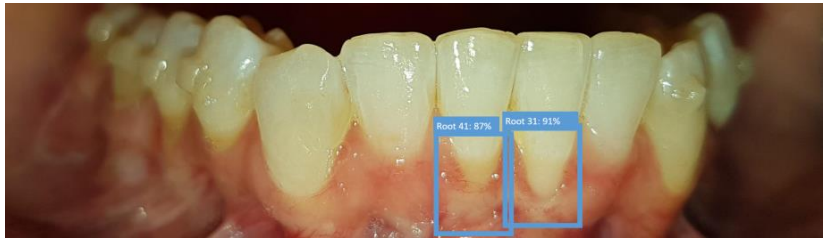

Date: 24/09/2017
Recession maintained on
31/41

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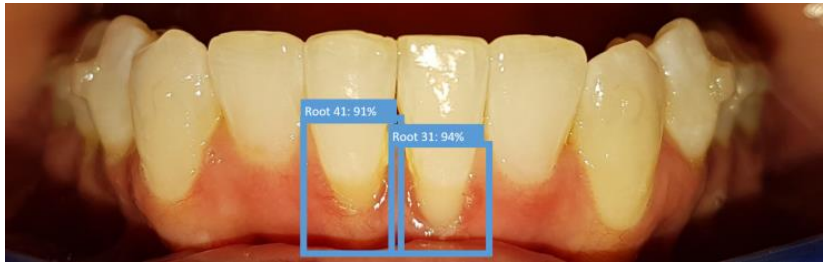


Date: 25/11/2017
Recession Increased on
31
Maintained on **41**

ARTIFICIAL INTELLIGENCE

DENTAL MONITORING

COLLECT:

280,000,000 INTRA ORAL PICTURES

LEARN IN BATCH:

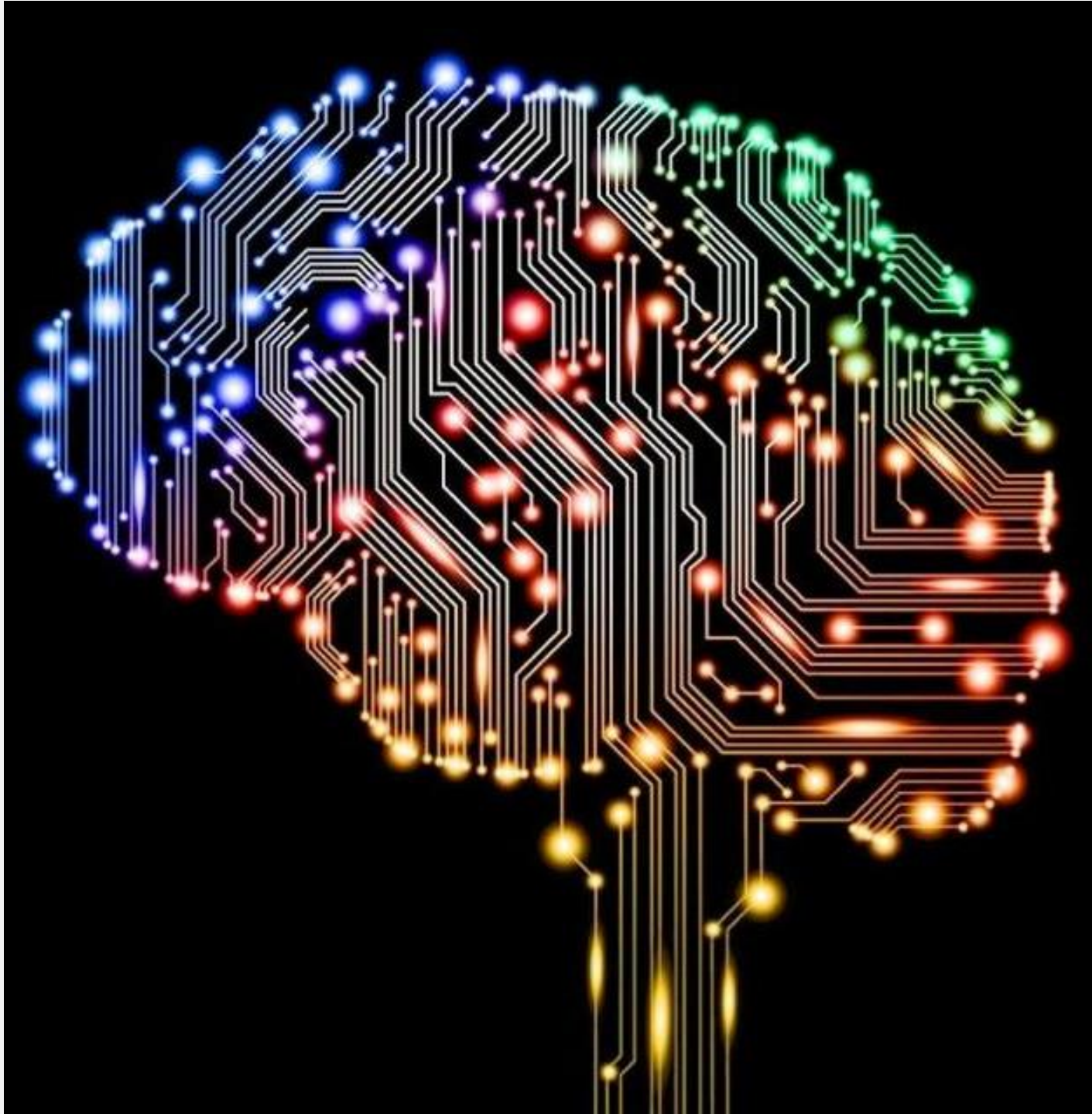
10 CLICKERS : PROPERTIES SUPERVISED BY 15 ORTHODONTISTS AND DENTISTS

BUILT:

70 ENGINEERS WORKING ON DEVELOPING THE PLATFORM AND NEURAL NETWORKS (40% DM WORKFORCE)

DETECT:

MORE 170 TYPES OF DENTAL METRICS, SITUATIONS OR ATTRIBUTES

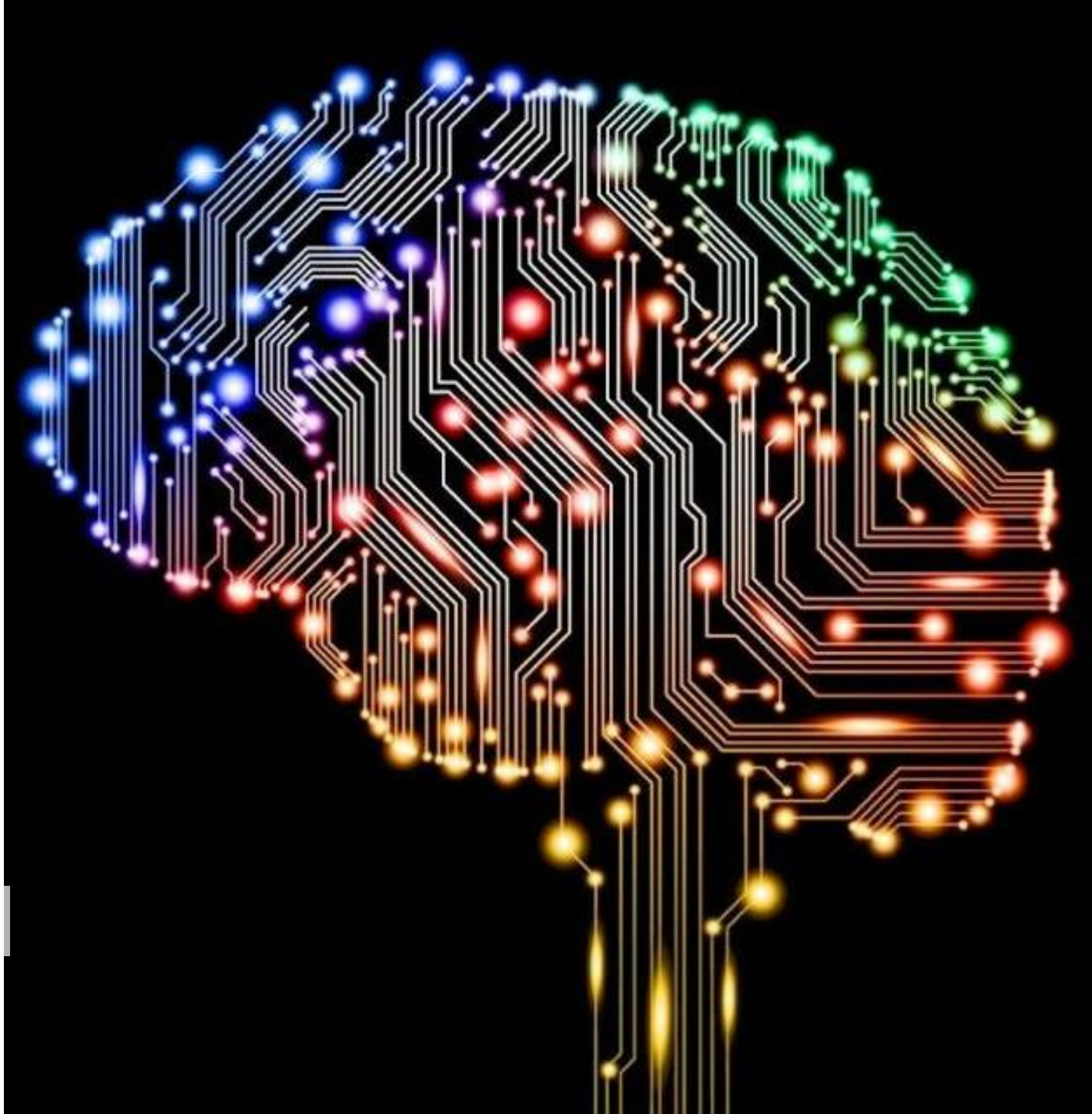


DENTAL MONITORING

AUJOURD'HUI

5 400 000 analysis performed

4 years of engineering dedicated to **AI and metaheuristics** algorithms for dental applications

80⁺ patents and applications

Users in **35 countries**