



# Rare diseases in orofacial area – intraoral and facial scanner growth monitoring

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## Objectives:

Rare diseases are complex, predominantly hereditary (or congenital) diseases with low occurrence in population, which influence patient's quality of life and social integration or even threaten their lives. Although the individual diseases are rare, in total they are the cause of up to 8% of morbidity and mortality in EU. The main flaws in the area of rare diseases today not only in orofacial area (ERN CRANIO) include insufficient identification of this diseases within the International Classification of Diseases system, failures in their timely diagnosis and treatment, unequal quality of provided services, poor data collecting, and non-complex and unsystematic care provided to patients with rare diseases, together with poor awareness of these diseases among general public and experts and insufficient data collecting on national and regional levels. Therefore the strategy of therapy includes timely diagnosis and access to appropriate treatment of rare diseases, co-ordination and monitoring of effective care for patients, improving education and awareness among general public and experts in given area. Precise documentation of the oral cavity and proportions in the face area is crucial not only in dentistry, but also in prosthetics, orthodontics or orthognathic, maxillofacial and plastic surgery etc. For that reason intraoral and facial scanners can helps us to prepare step by step workflow demonstrates the functional and esthetic results.

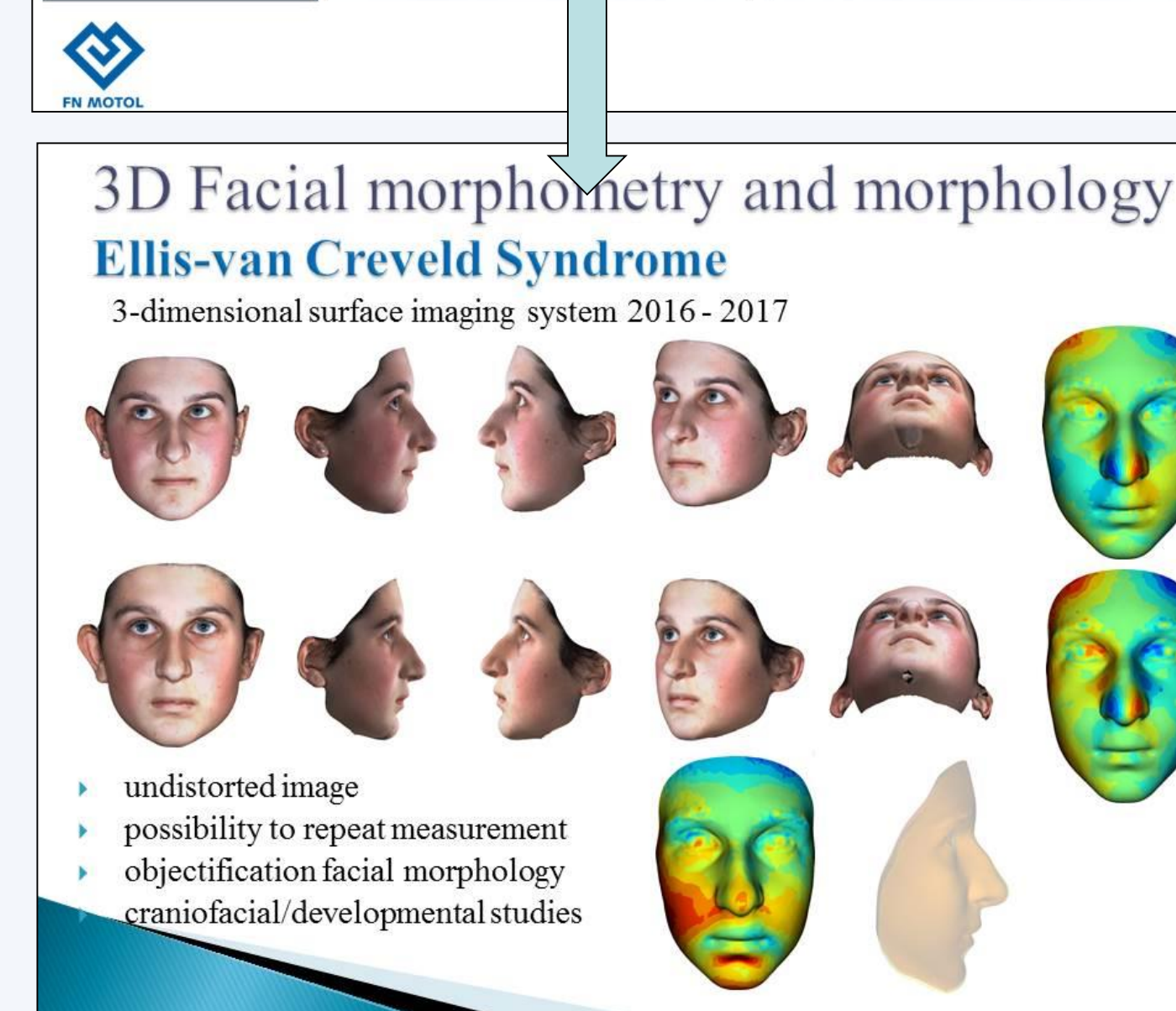
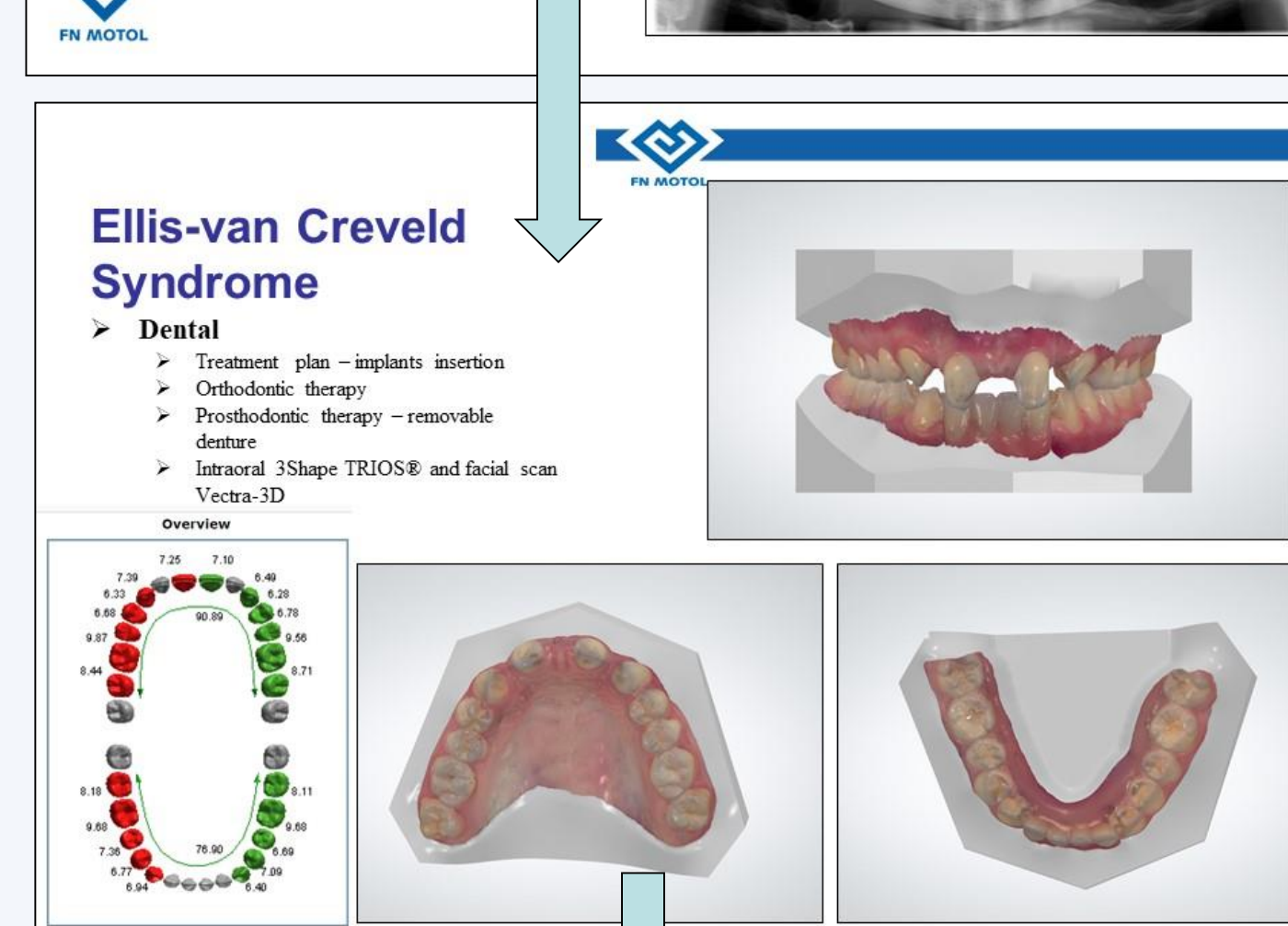
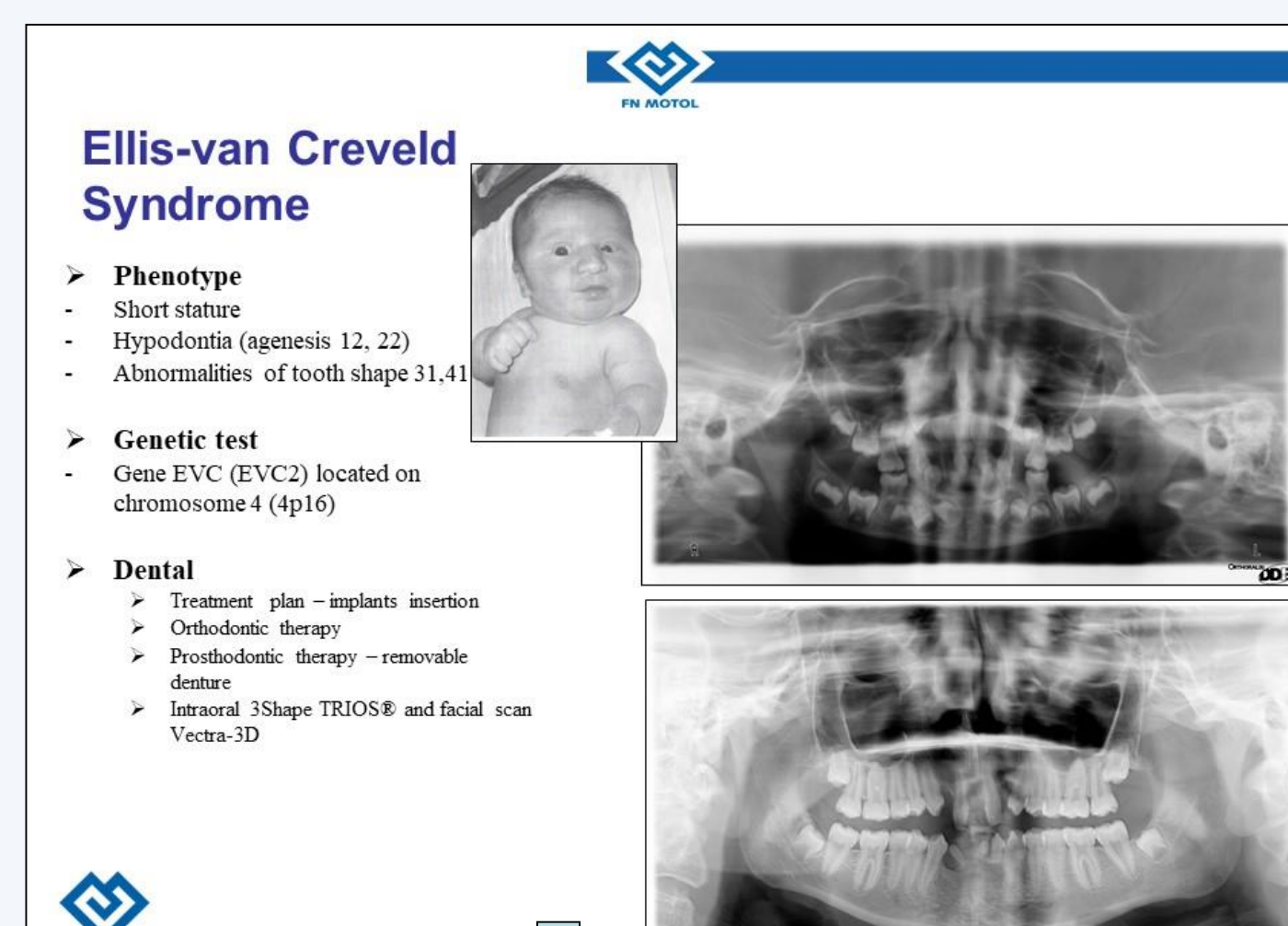
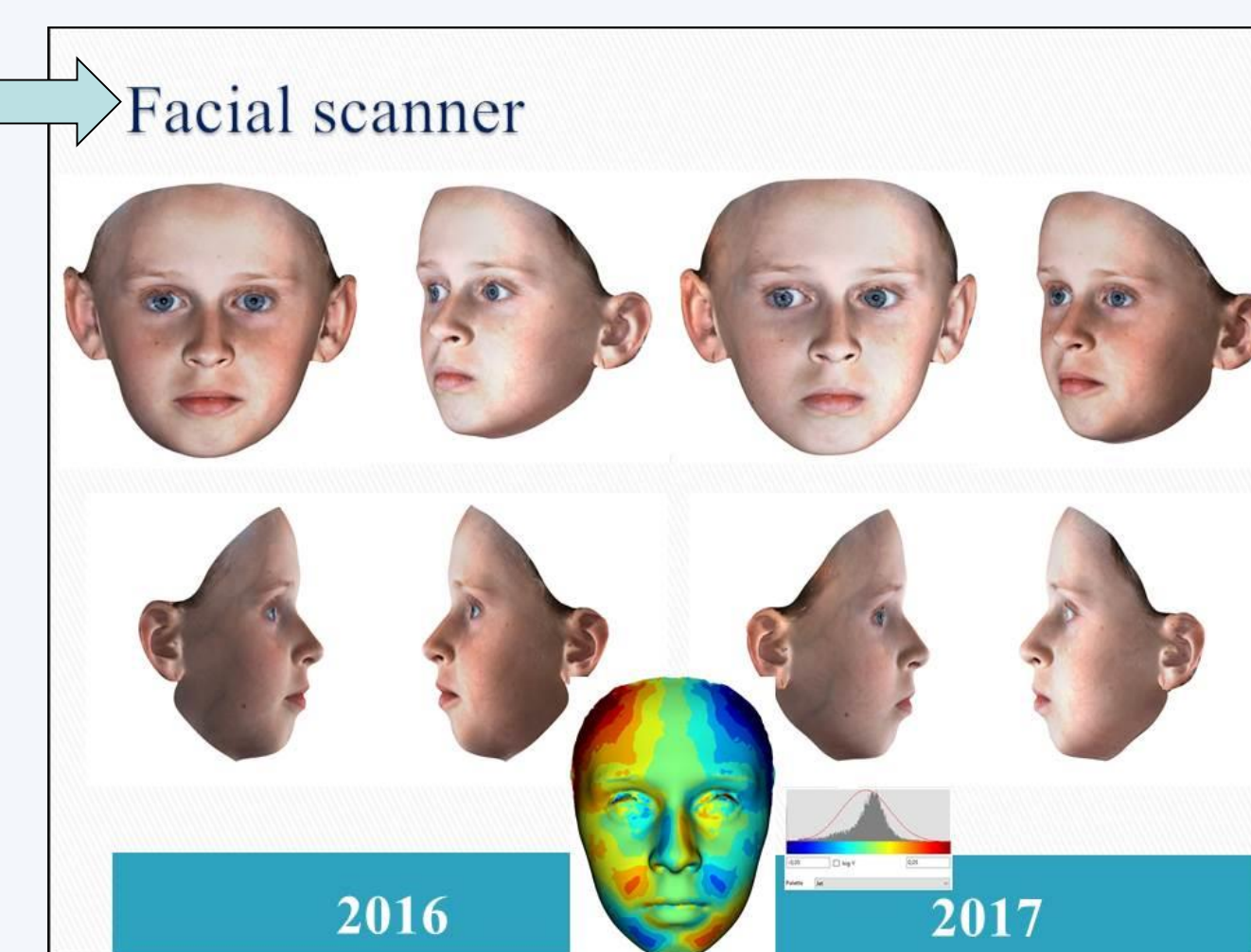
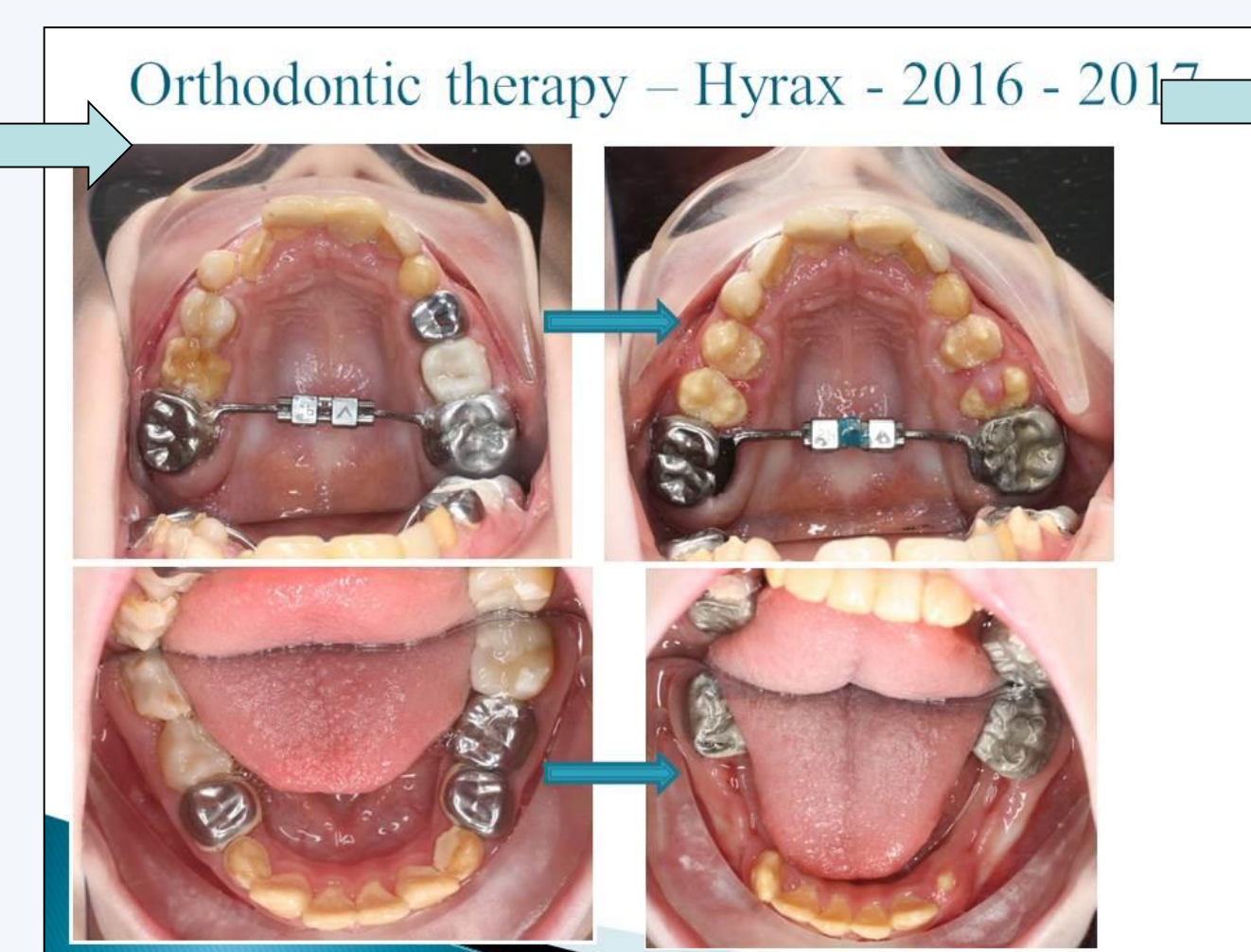
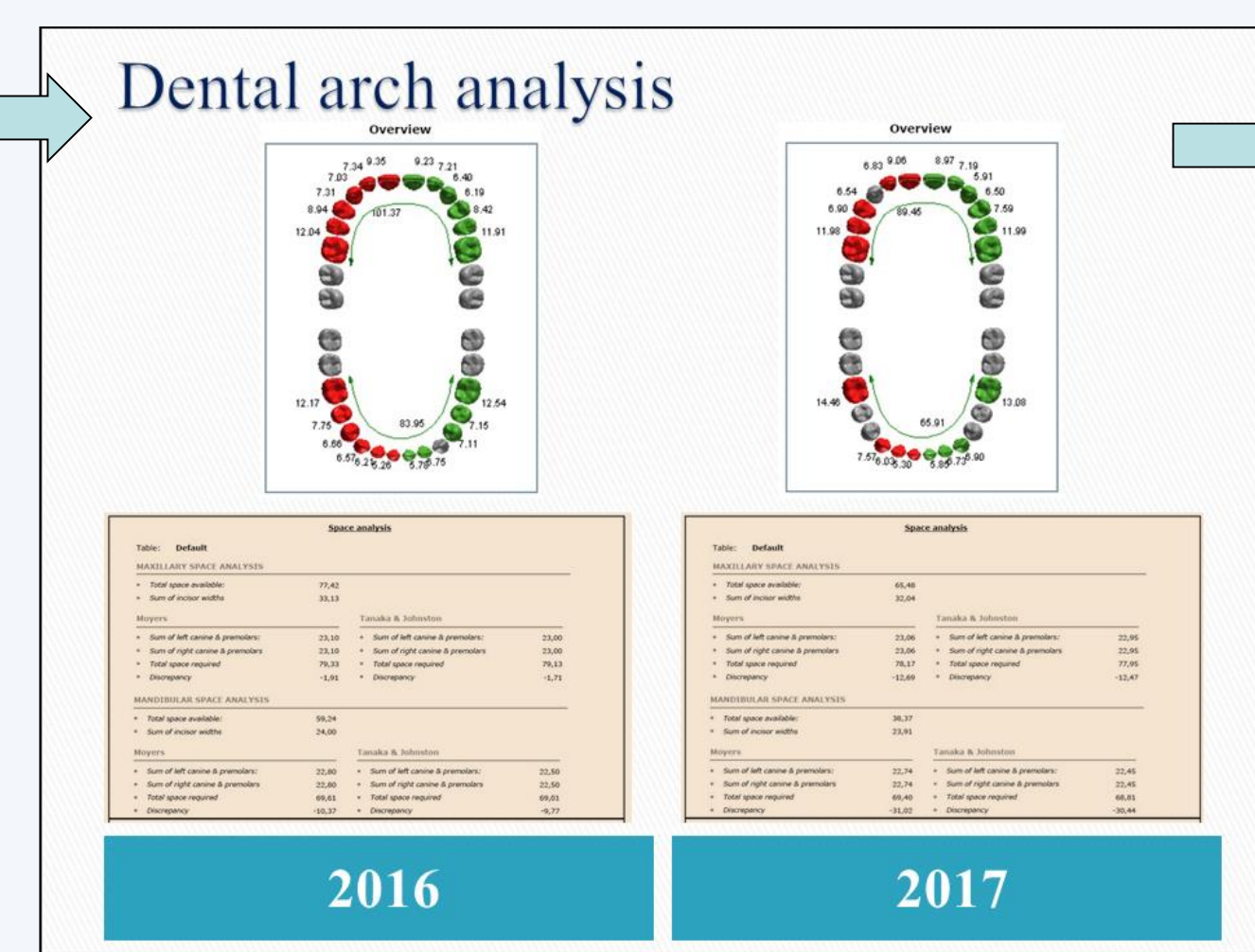
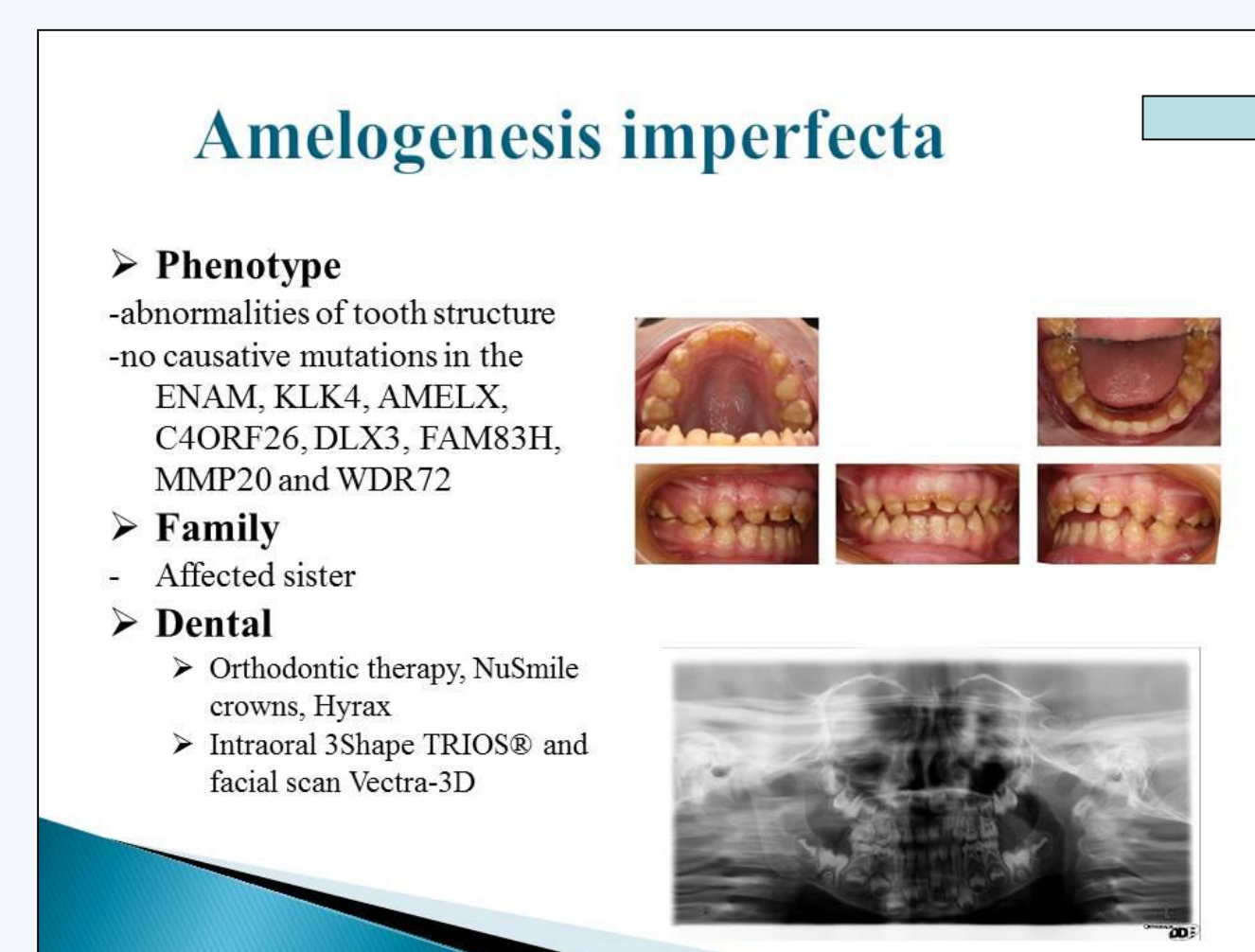
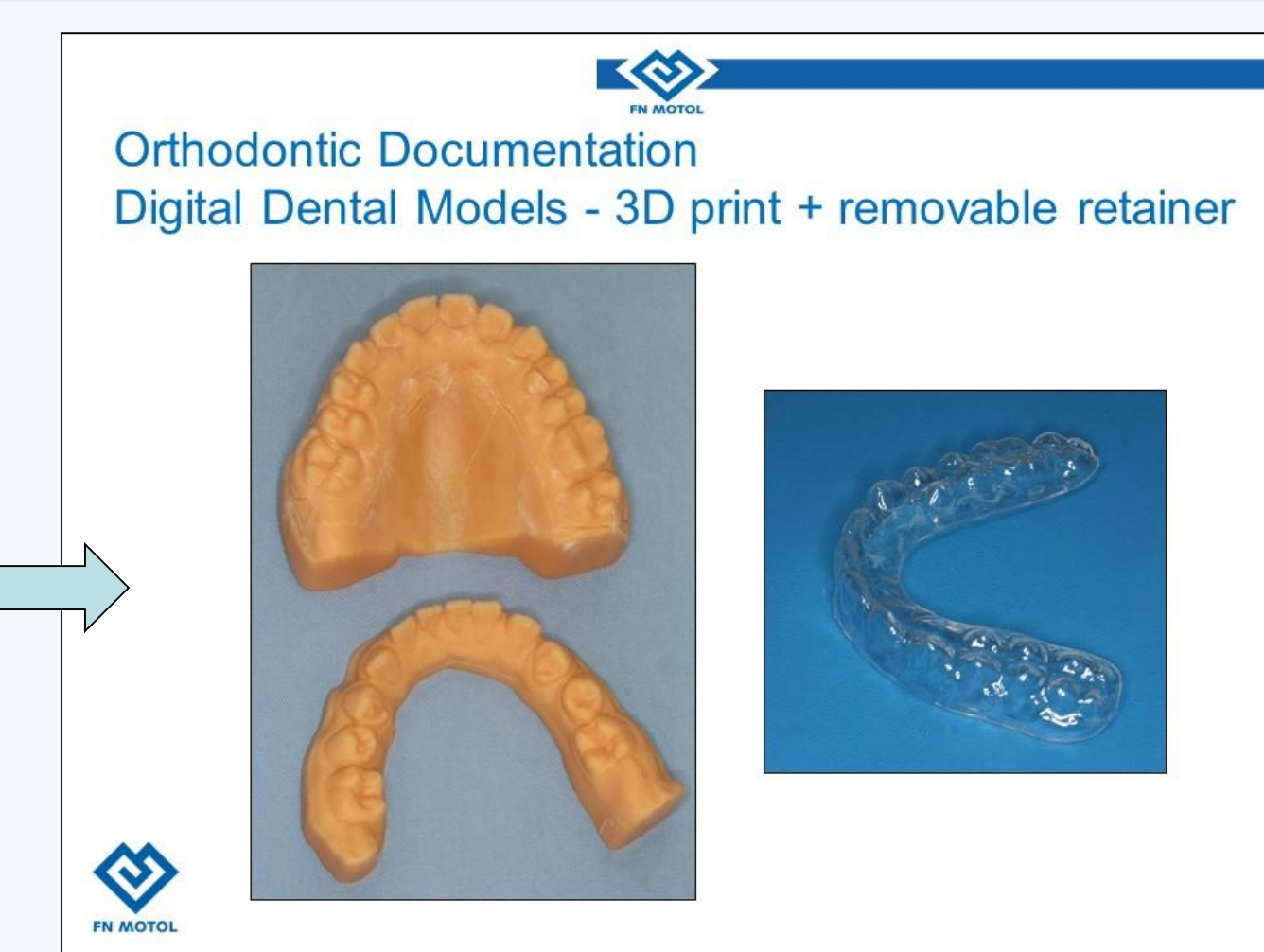
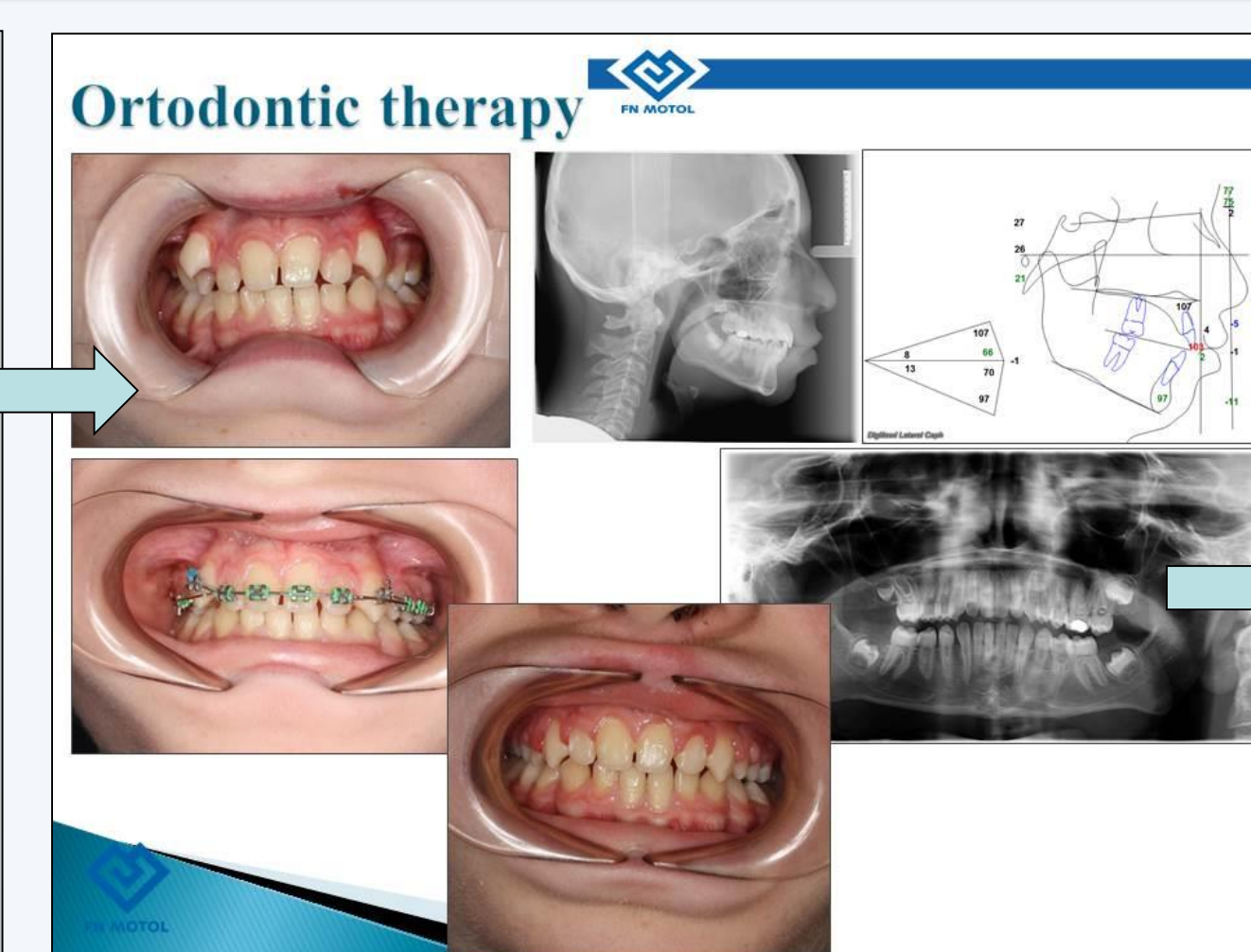
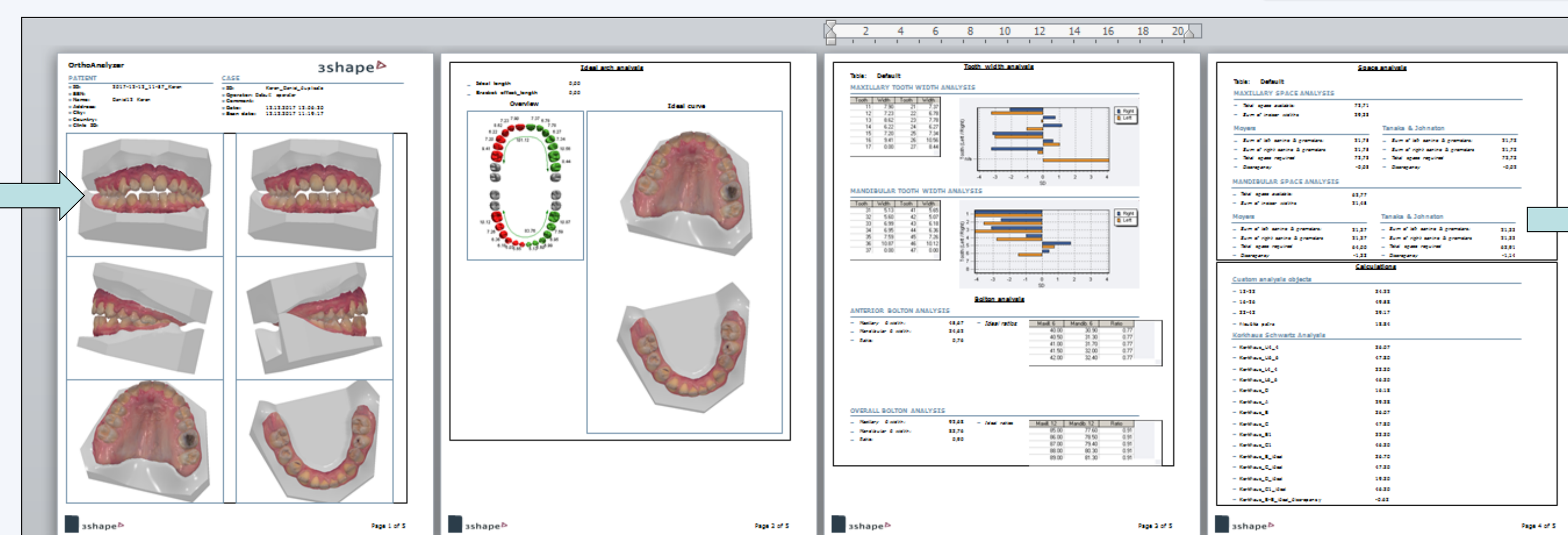
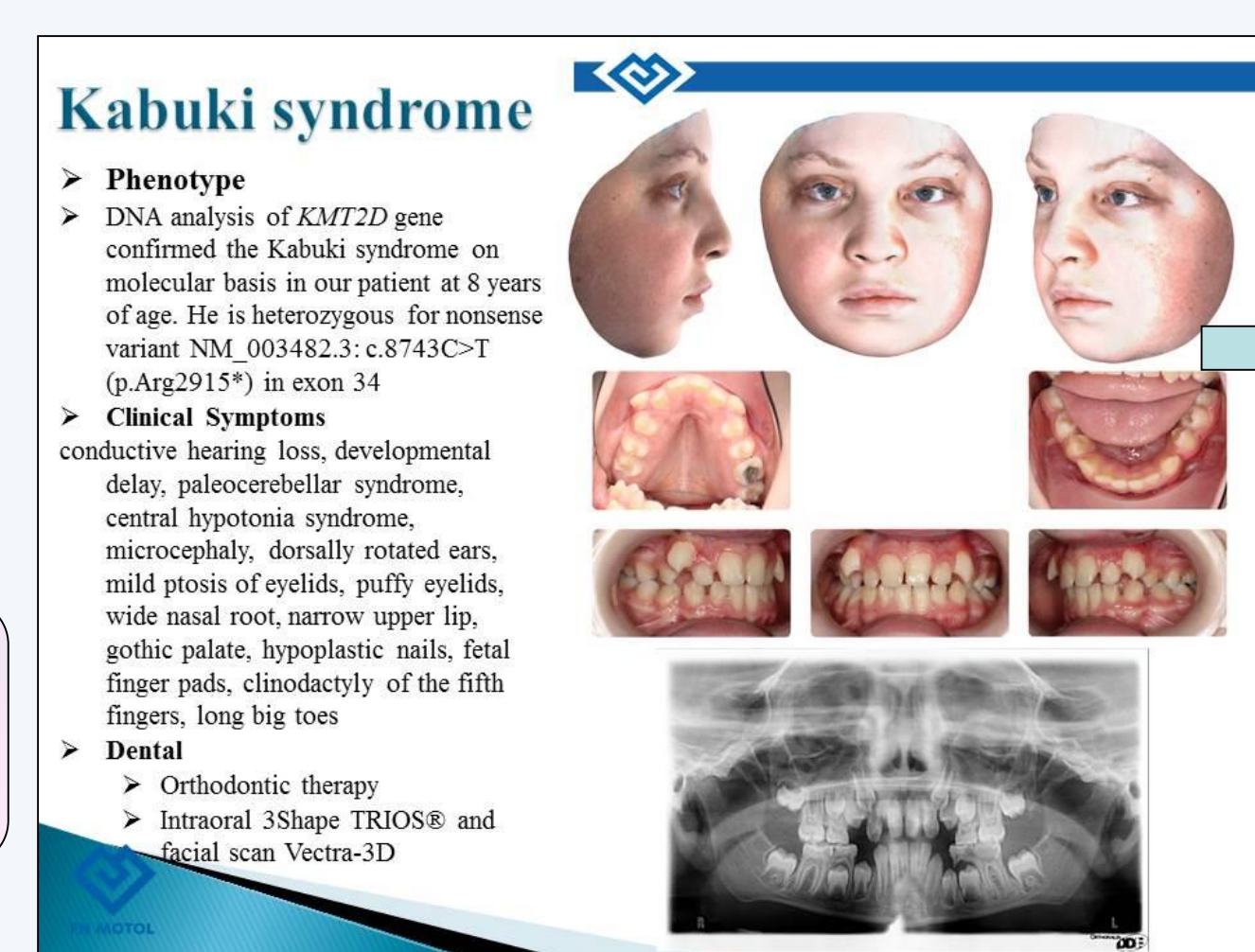
## Material and methods:

Patients with Amelogenesis imperfecta, Ellis-Van Creveld and Kabuki syndrome were checked and treated using multidisciplinary therapy. The basis, however, was clinical and molecular genetics of rare disease. Using Trios® 3Shape we established cooperation with our patients with fast, easy, and accurate 3D real color impression of upper and lower jaw including bite registration. Frequently we also made video and we have special software for measuring distances, angles and planes. 3D print is every time base of medical documentation, can be also used for dental and orthodontic analysis and therapy e.g. composite veneers, NuSmile crowns, removable children denture, removable orthodontic appliance etc. Facial scanner VECTRA prepares 3D facial morphometry and morphology with undistorted image, possibility to repeat measurement, objectification facial morphology and can be also based on craniofacial/developmental studies.

## Aim/Hypothesis:

Current 2D + 3D imaging methods together are not enabling a satisfactory imaging of tissues, which is required for a given purpose. Cooperation with children with rare diseases is often difficult and the baby cannot be treated optimally. The aim of study was to evaluate long term treatment monitoring in the dental office using Trios® 3Shape Dental Systems digital intraoral scanner, and facial scanner VECTRA 3D Imaging system without help of classical impression, plater cast model preparation, photos and classical dental labs technique and technology.

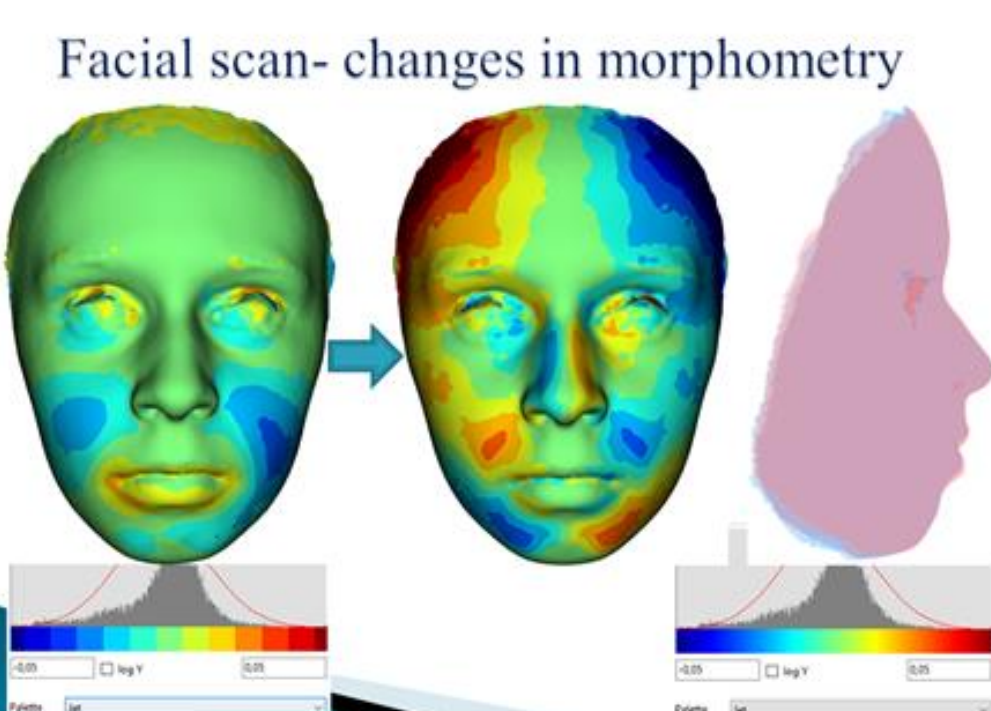
## Intraoral and facial scanner growth monitoring:



## Data collection - FACIAL SCANNER

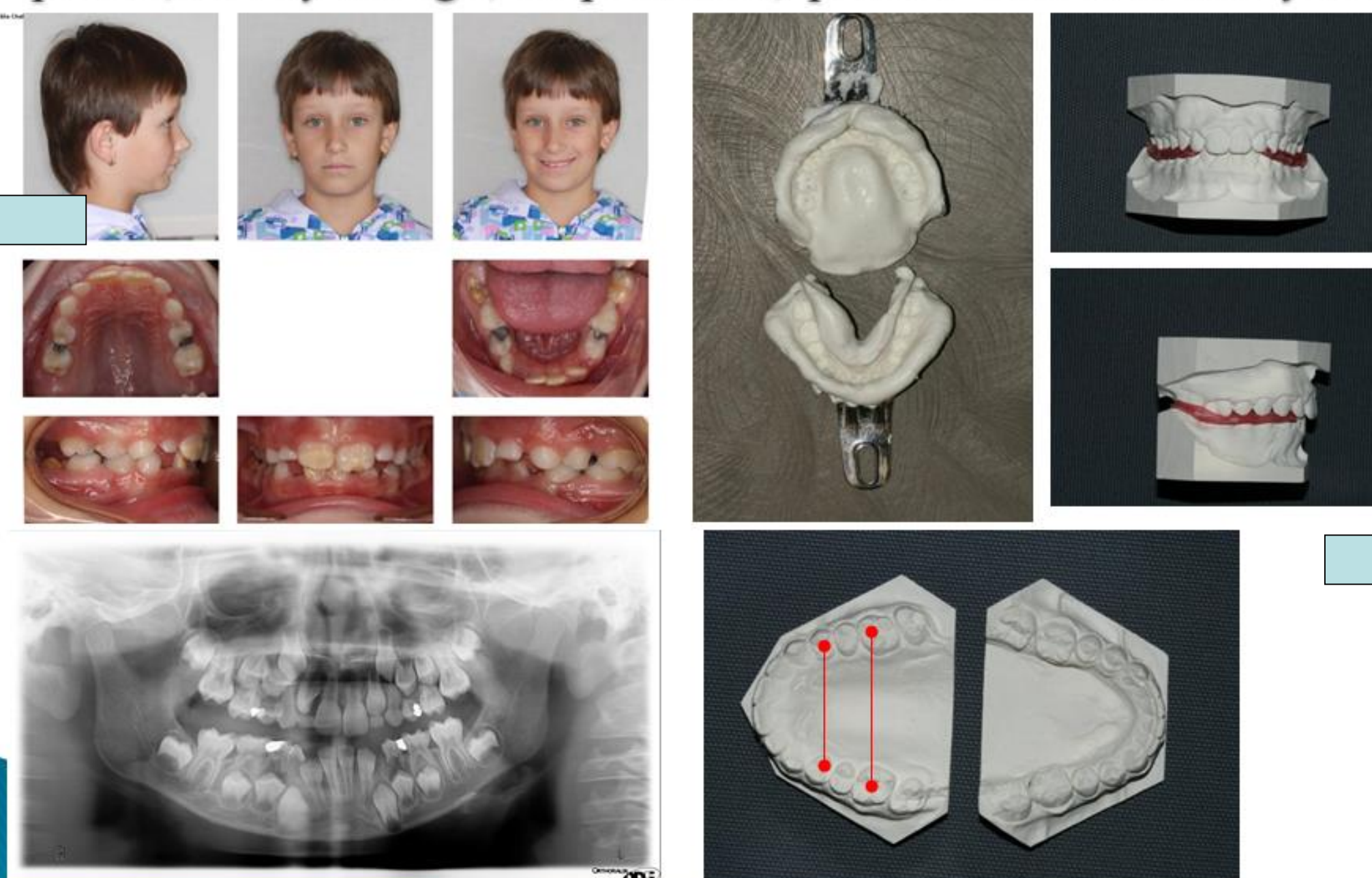
### VECTRA 3D Imaging system, Canfield Scientific

- ~1.5 milliseconds
- Scanning under the angle of 180°(from ear to ear)
- 2 x Modular Camera Units (MCUs) with Machine Vision Cameras and 3 x External Flash Units
- Resolution <0.2mm
- Non-invasive method of capturing the face
- Automatically generated 3D mesh



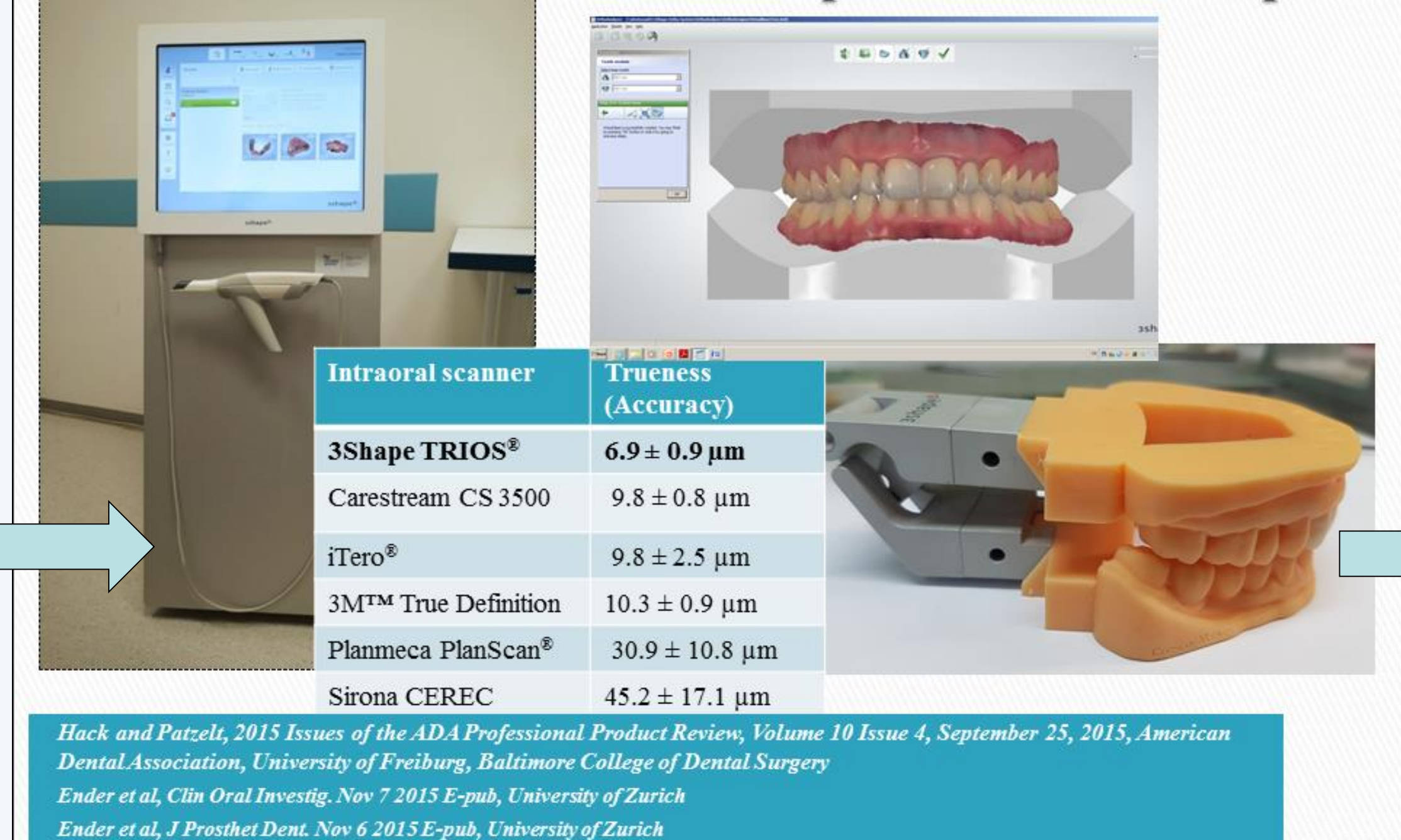
## Classical methods of analysis

photo, X-ray image, impression, plaster cast and analysis

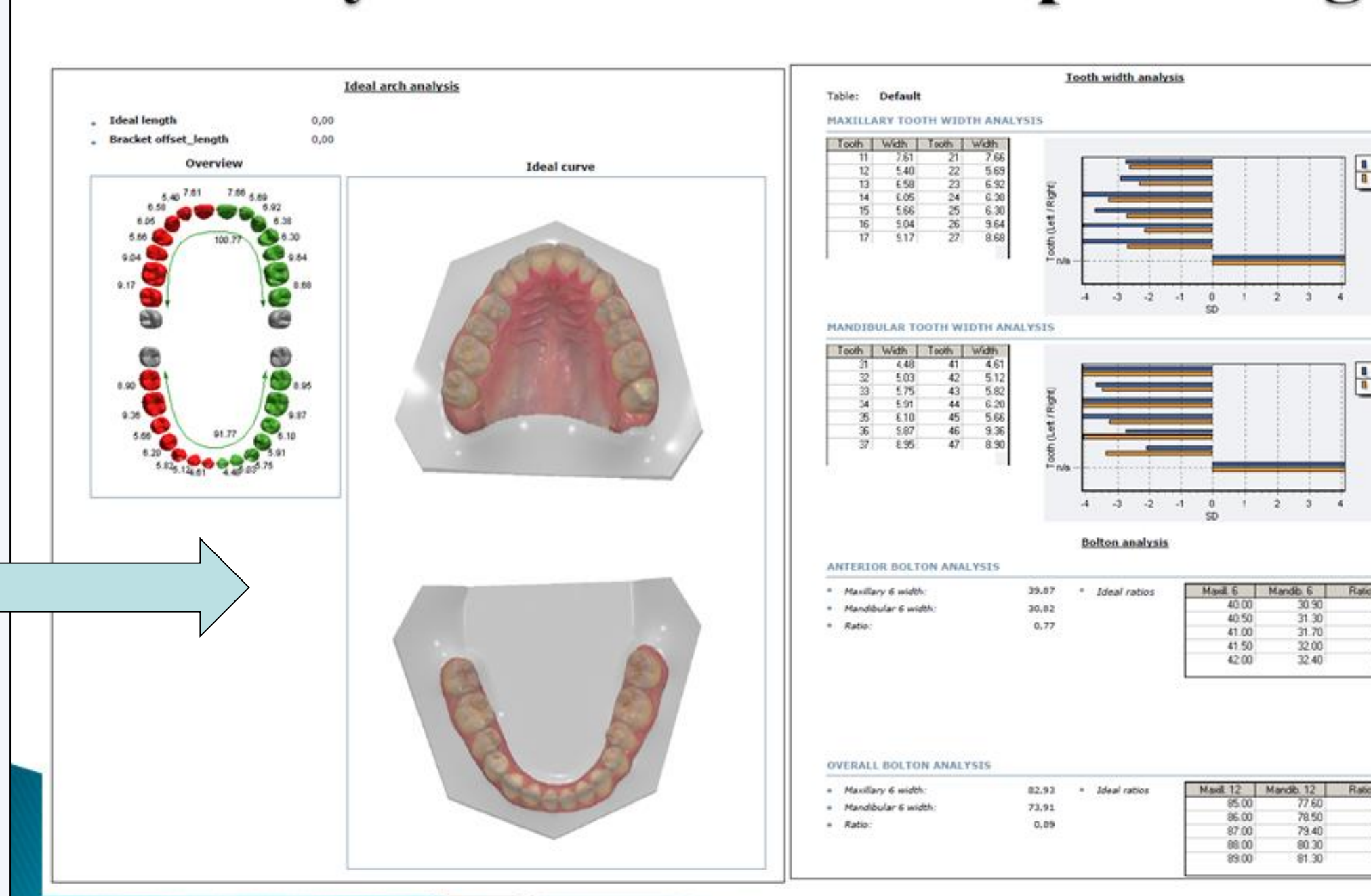


## Data collection and treatment - 3Shape TRIOS®

### virtual impression and 3D print



## 3D analysis and treatment planning



Rare Diseases 360°  
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