Cephalometric software: a trial on the road

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Introduction

The cephalometric software market offers at least 20 good products and it is extremely difficult to compare them because orthodontists have different claims. Visual imaging, diagnosis, planning process, and case report presentation are today the fields where the software house must work to obtain the market favor. In this paper we report our personal feelings about the trial of a cephalometric software called Onyx Ceph® 2.4 English version developed by Image Instruments GmbH, a German company. A real case report was prepared following the normal steps in our office to evaluate this product "on the road".

Software Analysis

Installation:

The procedure is easy and fast, it creates automatically links and menus.

Look and Feel:

At first look the vocal support can appear to be only a fancy gadget. The software presents itself and sends regards talking with a female voice, but during data input it can be useful for speeding up the process. The software accepts input from scanners (TWAIN), digital camera, digital X-ray systems, and a large amount of image formats can be used.

Usability:

The windows disposition is very effective and the main image is automatically adjusted with the needed percentage of zoom. The main picture, 2/3 of the screen, has on the left three boxes with navigation and zoom functions. We liked a lot this opportunity to zoom

only the needed area during an analysis, because it helps the positioning of the cephalometric landmarks and consequently increases the precision. The first menu, "Patient", opens different choices, but we had difficulty in finding out (without reading the help file) that after new patient data we had to go on to "new finding" in the same menu. In our opinion, a different definition, like "open image" or "new input", could be more user friendly. The menu bar and the buttons are intuitive and easy to use. The increasing step can be adjustable from the image processing tool (left mouse button) allowing a good control for each function. Among this functions a very useful tool is the magnifying glass, a lens with 4 different sizes and magnification. On the contrary the "pseudocolor" function is almost unuseful but fancy. Usability is very good and the global architecture realize an intuitive software.

Implemented analyses							
Lateral cephalometric analysis	Posteroanterior cephalometric analysis	Hand-wrist X-ray Analysis	Cast Analyses Permanent Dentition	Cast Analyses deciduous dentition	OPT Analyses	Profil-type Facial Analyses	Enface-type Facial Analyses
Analysis of the Association of Austrian Orthodontists Analysis according to Hasund (BERGEN-Analysis) Analysis of the University of Bern Craniofacial Analysis according to Burstone Soft Tissue Profile Analysis acc. to Burstone Clark - Correlative Analysis Clark - Linear Craniofacial Analysis Downs Analysis Dual Plane Analysis	Analysis of the University of Münster XV-Point-Analysis acc. to Ehmer Analysis acc. to Ricketts	Growth Analysis	Arch length Bolton - Anterior Ratio Bolton - Overall Ratio Herren - Arcogram specific Pont-Index Korkhaus - Arch Analysis Linder & Harth - Arch Analysis Lundström - Segment Analysis Mühlberg et al. - Arch Analysis Pont-Index Supporting zone Analysis	Ballard-Wylie - Expected need of space Berendonk - Expected need of space Carey - Expected need of space Droschl - Correlative prediction Herren - Arcogram specific Pont-Index Huckaba - Expected need of space Korkhaus - Arch Analysis Linder & Harth - Arch Analysis Moyers - Expected	Dental age acc. to Demirjian Implant Survey Dental age acc. to the University of Tübingen	Lip Analysis Profile Analysis acc. to A.M.Schwarz Proportional Analysis Proportional Analysis acc. to Legan & Burstone Soft tissue Analysis acc. to Epker & Fish Soft tissue Analysis acc. to Rakosi Analysis of the University of Tübingen for lateral photographs	Divine Proportion Golden Ruler Symmetry Analysis of the University of Tübingen for frontal photographs

Epker & Fish - Soft Tissue Analysis Analysis of the University of Frankfurt Analysis of the University of Freiburg Analysis acc. to Harvold Analysis of the University of Innsbruck ISV - Graphic "Actual-Nominal-Comparison" acc. to Hollmann / Haberler Jarabak - Dental Analysis Jarabak - Skeletal Analysis Lip Analysis Analysis acc. to Mc Gann Analysis acc. to Mc Namara Analysis of the University of Münster Profile Analysis Rakosi - Metric Analysis Rakosi - Sagittal Analysis		Symmetry Tonn - Ratio of the incisor's widths Weise - Space Analysis	need of space Mühlberg et al. - Arch Analysis Müller - modified Tanaka-Analysis Pont-Index Tanaka - Expected need of space Tonn - Ratio of incisor's widths Tübingen - Primary teeth index Weise - Space Analysis	

Rakosi - Incisor Analysis								
Rakosi - Vertical Analysis								
Ricketts - 11- Factors- Short- Analysis								
Analysis acc. to Riedel Schmuth - Differential Analysis								
Schwarz - Gnathometric Analysis								
Schwarz - Craniometric Analysis								
Steiner - Analysis								
Analysis of the University of Tübingen								
Tweed - Triangle								
Analysis of the University of Ulm								
Soft Tissue Profile Analysis								
Modified Zürich- Analysis								

Interoperability

We define interoperability as the ability of a program to interact with software and hardware that surrounds it. It monitors the exchange of data and it is very important for the end user. This software accepts input from a digital camera (e.g. Nikon coolpix, or pixera), from flat bed scanners (TWAIN protocol), from dental scanners (OREX Combi-X 2000, GENDEX DenOptix Ceph., SOREDEX Digora PCT) and Digital X-ray Systems

(SIRONA Orthophos DS Ceph, PLANMECA Dimax2). The software house does not communicate the file format for software interoperability in the english version, even if a button to call a practice management software is available from the main menu. More information are available from the german documentation files.

Treatment simulation:
A treatment simulation tool is included to model complex orthodontic and surgical treatment details, and to simulate facial soft tissue deformation based on empirical and numerical approaches. The resulting patient profile belonging to the displaced tooth and/or bone structure can be generated to visualize the treatment objective.

Defining multiple regions is possible to simulate and illustrate orthodontic and surgical treatment objectives. Each region can be named individually, divided in new regions, shifted, rotated, and deleted.

The soft tissue deformation is illustrated depending on the movements of the regions (e.g. bone structures) based on empirical or numerical models which have to be edited or preselected from an internal library by the user.
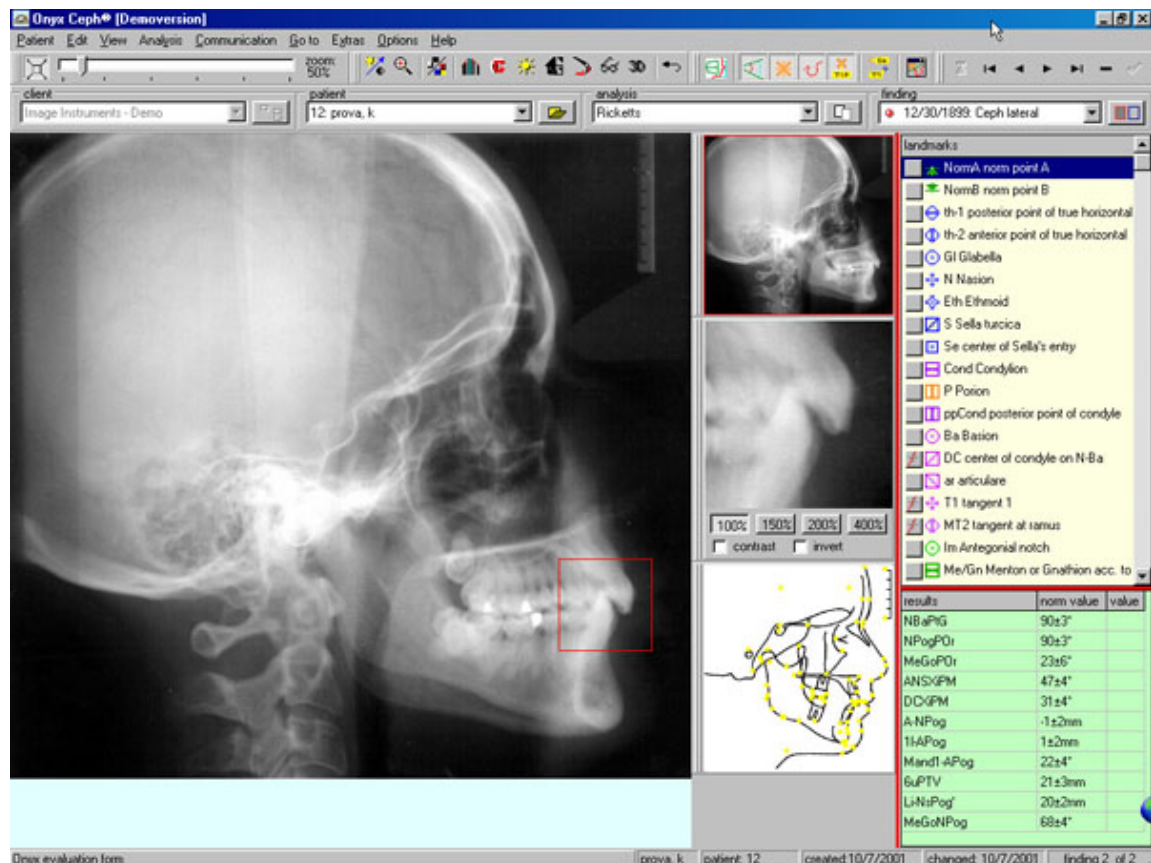

Today the result presentation has big importance in showing treatment result and our main request as orthodontists is to obtain complete, accurate, and well formatted reports in a short time. Furthermore, we want to exchange the patient data through Internet for consultation, or referral.

This software can generate complete Java case reports including harmony box, facial growth pattern, tabular data, transparent superimposition, Epker and Fish, and the complete pictures series.

The self-extracting file can easily go on Internet if the image dimensions are not too big.

We appreciated a good level of image improvement tools (considering the group of cephalometric software available in the market), but we could not test the printouts because the received software was a trial version. In our opinion this presentation form is very useful for professional and teaching purposes, but not very useful to show to patients because they appreciate mostly the before&after visualization.
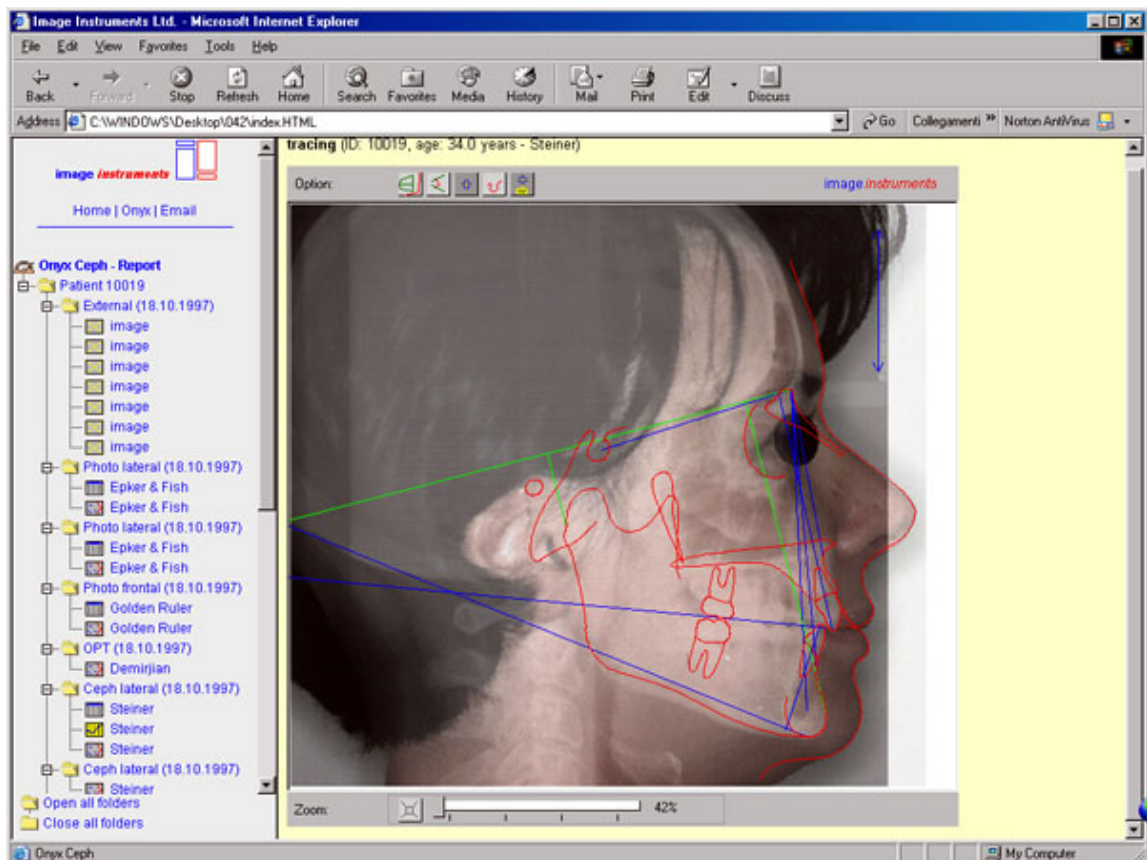
Conclusion:

We tested a real orthodontic case in the Onyx Ceph Software and we can say that this software is one of the most complete products in the market for functions, tools, and ready to use cephalometric analysis.

The software appears to be stable, reliable and user friendly. Some improvements can be made in the JAVA case report to allow two pictures on the same screen for a better comparison of the treatment.

Using a Java engine, the software is able to produce case reports easily for any standard Internet browser. This feature is important for professional online correspondence and publishing of online journals.

We do not want to express considerations about the prices but we appreciated the

opportunity of choosing between Open Subscription License (OSL) and Runtime License (RL). Renewing OSL registration is offered in time but not required.

We consider this (OSL) policy convenient for professionals because it requires less investment on the product but also mainly because it represents a concrete obligation from the software house to update regularly and maintain a competitive product. In addition, this software is an all-in-one package and this has been appreciated to avoid hidden costs connected with separate modules or features.

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