TektronixTiops - DOSTiops – Tiops2000 – Tiops2005

History and Present Status

The computer program TIOPS was originally inspired by the facial growth studies of Professor Arne Bjørk's, and by the visual treatment simulation procedure developed by Robert M. Ricketts.
The main concept is that a visual treatment simulation is developed based on the initial diagnosis of the patient. At the completion of the treatment a second cephalometric analysis is made that then can be compared with the initial analysis and the simulation. By following this protocol the original treatment plan but also the simulation can be evaluated for relevance and consistency.

The initial version of the program was developed in 1984 by me using a Tektronix work station with a processor capacity of only 8KB. With the introduction of the first programmable IBM PC the initial TIOPS program was converted to a DOS system in 1989.

From 1984 and until now the program has been used to do pre-treatment analyses, treatment simulations and post-treatment analyses to be compared with the simulations on all my patients in my two offices, first in Denmark until 1994 and thereafter in Germany. The total number of patients analyzed amounts to about 14.000.

When Windows for the PC was introduced our development team was expanded as I was joined by my son Peter Bjørn-Jørgensen who became the system developer. We would like to thank our families for their great patience during this time.

The TIOPS version 2000 was implemented and further developed with the hanging Windows Versions and with the greatly appreciated assistance and feed-back of our users.

In response to the introduction of the Digital Radiographic Technique the version TIOPS 2005 was developed. This permitted both the user to digitize directly off the computer screen or use the conventional analog technique using a digitizer. In other words TIOPS2005 combines both the new digital media and the traditional analog.

In 2006 I joined the faculty at the orthodontic Department at the University of Copenhagen which greatly improved the development of the program. The result was an expanded group of beta testers and numerous updates were made to improve the program.

The Tiops2005 program is now completed as it was initially conceived.

Many revisions and adjustments have been made and it now has a complete cephalometric analysis, age corrected and an additional occlusal analysis based on occlusograms. Furthermore, a new frontal analysis has been added and the program offers integration of an articulator analysis for surgical orthodontic treatment planning.

A recent addition is a statistical module that is available for case studies. This module permits not only average tracings of patient files but also cephalometric statistical analysis. Finally the data can be directly transferred to a spreadsheet in Excel.

The TIOPS program has now reach a stage where the program in general is without programmatic errors. However, should you as a user encounter problems with the program we would appreciate your feedback and we will correct any errors immediately. New updates can be found on the TIOPS website (www.tiops.com) under DOWNLOADS. Please, do not forget to read the Notes next to the download. We will also continuously update the support files with new information for the users. These updates can be found under DOKUMENTATION.

We are currently working on the integration of Tiops2005 into several Orthodontic Clinical programs. This is not particularly complicated but requires specific instruction from each user.

Future Developments

Our future goal is to develop version Tiops4 which will permit merging of the patient's facial photo with the digital headfilm. By combining the images new possibilities for a reliable soft tissue analysis will be available with concomitant growth and treatment simulation of both hard and soft tissue changes together. Moreover, it will be possible to determine the patient's stage of skeletal maturation with a new program from *Visiana* that performs an automatic assessment based on a hand wrist radiograph. We are presently working on this issue.

Further Developments Planned

With the recent development of the new cone beam CAT scan technique new opportunities are opening up. Of these we already have 3D CBCT images but also digital study models and 3D facial scans. However, this technology needs to be integrated in an new version of TIOPS in a similar fashion as the present 2D images. This might happen even further out in the horizon with version Tiops5 which eventually will be developed with the Post Graduate Residents and in collaboration with the 3D Laboratory at the Dental School in Copenhagen. In addition we will externally cooperate with other institutions and companies. We also invite our entire user group to participate with their ideas and suggestions.

Jens Bjørn-Jørgensen, DDS, 2010/12