

Delta⁴

by ScandiDos

Delta4 Insight
**Verify the accuracy of your
treatment plans**



Planning

CONFIDENCE | SAFETY | ACCURACY | EFFICIENCY



Verify the quality of your plans with the accuracy of Monte Carlo

Delta4 Insight* benefits

- Utilizes a Monte Carlo dose engine
- Independent verification
- Integrated with the Delta4 software
- Fully automated process
- Modifiable accuracy and calculation time
- Flexible commissioning, use golden data or your own
- Customize your protocols
- TG-219 compliant

*Currently available together with Delta4 Phantom+.
Not available for all markets, contact ScandiDos for more information.

Independent verification of your TPS calculations

Verify your plan with confidence

Delta4 Insight is an independent secondary 3D dose calculation software that utilizes a state-of-the-art Monte Carlo engine. It provides you with an independent verification of the dose calculation algorithm and verifies that the calculations your TPS makes are accurate. Delta4 Insight allows you to verify the accuracy and quality of your plans, without adding to your clinic's workload.

The calculations answer the vital questions:

- Is the target covered?
- Is the homogeneity in target acceptable?
- Is the dose to organs at risk acceptable, e.g. within the criteria as specified by RTOG protocols?
- Is the result of the secondary dose calculation the same as the TPS dose?

Golden standard

Peak precision in all clinical situations

Monte Carlo dose calculation is considered the gold standard computation method for accurate dose calculations in radiotherapy. When using a Monte Carlo algorithm for your treatment plan verification, you can rest assured that you will accurately model all clinical situations.

- Delta4 Insight achieves an accuracy of 1%/1mm (compared against measurements and against EGSnrc general purpose Monte Carlo algorithm).



To ensure the highest accuracy, ScandiDos has performed thorough benchmarking of Delta4 Insight, against general purpose Monte Carlo code (EGSnrc), against measurements (according to AAPM Medical Physics Practice Guideline 5.a.: Commissioning and QA of Treatment Planning Dose Calculations) and against high-quality TPS algorithms (Monaco® (Elekta) and Acuros® (Varian)).

Madeleine Holm
Software Product Manager, ScandiDos

All your patient QA integrated in the same software

Delta4 Insight is seamlessly integrated in the same user-friendly Delta4 software platform as the entire Delta4 Family of products. This enables easy toggling and comparison between plan verification calculation, pre-treatment measurement results and at-treatment measurement results to give a full overview of each patient treatment.

- **Effortless** – Delta4 users already know how to use the software.
- **Total control of the patient QA process** - Compare the results from the Delta4 Insight to measurements done at pre-treatment with the Delta4 Phantom+ and/or at treatment with the Delta4 Discover.

An example: Use the combination of Delta4 Insight and Delta4 Discover to verify the treatment. Do the planning QA with the Delta4 Insight and then use the Delta4 Discover at the treatment to verify each fraction. The combination gives you total control in an efficient way of each treatment from prescription to final fraction.

- **One database** - Results from the entire patient QA process are stored in the same Delta4 database.

Save time – no added workload

Fully automated process – instant results

With the extremely intuitive software, a single export from the TPS triggers an automatic 3D dose calculation and plan evaluation. It also generates gamma pass rate and a pass/fail indication for each OAR and target objective, allowing you to verify the accuracy and quality of your plans without adding to the workload in your clinic.

The verification process can start instantly after the treatment plan has been completed in the TPS by simply pushing the DICOM RT files from TPS (one or several patients) to the Delta4 Insight directory. Delta4 Insight then:

- Starts the Monte Carlo calculation automatically
- Evaluates the results automatically
- Instant display of pass/fail results
- Saves the results automatically in the Delta4 database

With calculation times in the order of minutes, you can be confident that Delta4 Insight will never disrupt your workflow

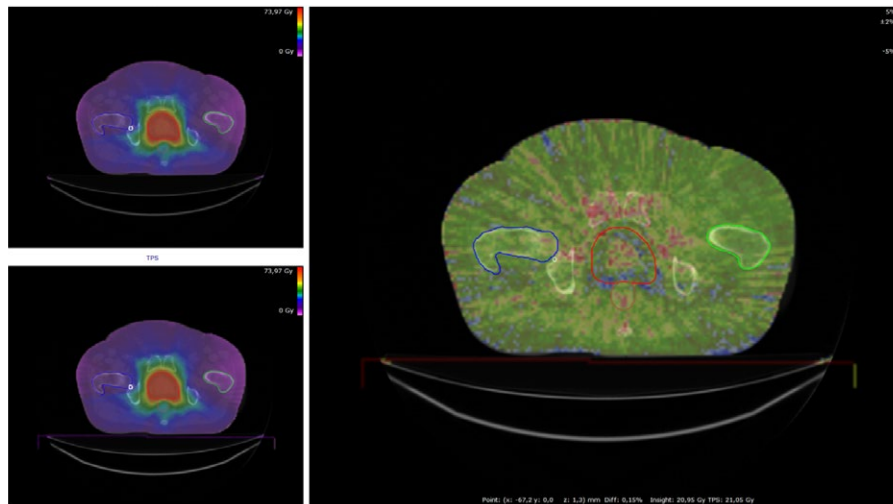
Modify calculation queue

- Prioritize your calculations
- Support for acute patients

Easy and intuitive analysis

The Delta4 Insight software come with a full suite of analysis tools to allow you to evaluate the calculation results in a fast, easy and intuitive way.

Gamma pass rate based on user-definable gamma criteria (multiple sets of gamma criteria supported), patient view 3D dose and dose difference displays, as well as dose volume histograms and plan objectives for all relevant structures, will be instantly available after a finished calculation – anywhere in the clinic.



Customizable user criteria

Modifiable accuracy and calculation time

The convergence criteria in the Monte Carlo calculation is user selectable, meaning you are free to make the trade-off between calculation time and the relative error in the calculation in the way best suited for your workflow.

Flexible commissioning, you define the independency

The software allows you to either use standardized golden data, data measured specifically for your TPS or new Delta4 Insight commissioning data.

Highly customizable

- Configure Delta4 Insight to be in accordance with your clinic's structure naming (e.g. in local language)
- Customize your target plan objectives according to your clinical practice
- User selectable gamma criteria

Follows RTOG recommendations

The TPS and the Delta4 Insight dose will automatically be evaluated according to user definable target criteria and OAR criteria based on RTOG and ICRU protocols. Delta4 Insight supports AAPM task group 219 requirements for independent calculation-based dose/MU verification for IMRT.

A photograph of a woman with long, wavy brown hair carrying a young child on her shoulders. The woman is wearing a grey t-shirt and has her eyes closed, looking upwards towards the sun. The child is wearing an orange t-shirt and a red wristband. The background is a bright, hazy outdoor setting with a cityscape visible in the distance. The text is overlaid on the lower half of the image.

**We drive the
development
of solutions
for safer
radiation therapy**

Technical Specifications

COMPATIBILITY

Data import format (from TPS)	DICOM RT
Radiation device, MLC	Varian TrueBeam® with Millennium® MLC & HDMLC Elekta Synergy and Versa® HD with Agility® MLC
Modalities	4-10 MV Photons. Flattened and FFF beams
Treatment techniques	Standard fractionation scheme in IMRT, Stereotactic treatments, VMAT, RapidArc, Conformal 3D

ANALYSIS TOOL

DVH	Display of DVH for each structure (both TPS and Delta4 Insight)
OAR objectives	DVH objectives based on RTOG protocols Automatic check if DVH objectives are met Pass/Fail indication for each DVH objective
Target coverage	Customizable target objectives like homogeneity, coverage Automatic check if target objectives are met Pass/Fail indication for each target objective
Gamma index	Gamma dose distribution comparison: Delta4 Insight versus TPS dose Pass/Fail indication for gamma comparison Support for multiple sets of gamma criteria
3D dose display	Display of Monte Carlo dose and dose deviations overlayed on the patient CT Point dose extraction

RECOMMENDED COMPUTER SPECIFICATIONS

Viewing station	Windows 10 Microsoft.NET Framework v 4.8 Quad core 8 GB RAM Free disc space at least 500GB HDD
Server for dose engine	Windows server 2019, Windows 10 Intel Xeon W with 18 cores/36 threads/2.3 GHz 64 GB RAM Free disc space at least 500GB

Technical specifications are subject to change without notice.

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Our ambition when developing Delta4 Insight was to extend our Delta4 family of products into a full end-to-end verification solution where the customer can be confident that Delta4 provides the true values and not just the deviations.

Görgen Nilsson
CTO and founder, ScandiDos

Innovative and Efficient QA

delta4family.com

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