# 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

Availability may vary by market. Please 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** – Manage all your patient QA in the secure, familiar and intuitive Delta4 environment. Minimize training efforts and be sure to be up and running as soon as possible.

- **Total control of the patient QA process** – Displaying your TPS QA and patient QA measurements in one place enables you to see connections between the two and draw informed conclusions about plan quality and deliverability.

- **One database** – Store results from the entire patient QA process 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
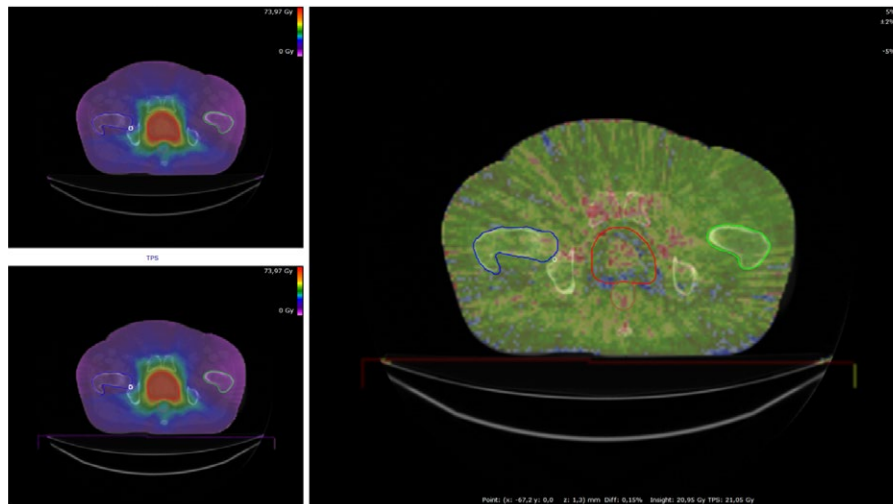
### Modify calculation queue

- 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.

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
Founder, ScandiDos

# Innovative
# and Efficient QA
# delta4family.com

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