

# Navident

**Dynamic freehand navigation  
for dental implantation**

*Highly accurate  
Less complications  
Simple workflow*



**Claron  
Technology**

# Navident

Using the CBCT image as a map, Navident guides surgeons just like a GPS guides drivers. The dental surgeon plans where implants should be placed in the image. Navident, dynamically tracking the drill and the patient's jaw, provides guidance and visual feedback to ensure the implants are placed according to plan.

## A simple, highly flexible system

Navident consists of four main components:

**1. A notebook computer** positioned above the patient's chest. The Navident software running on the computer provides both planning and navigation functionalities, tightly integrated.

**2. DrillTag:** A handpiece attachment consisting of a universal handpiece-hugging removable metal clamp, and a specially marked plastic part. DrillTag latches on the clamp in seconds.

**3. JawRef and JawTag:** A customizable patient jaw attachment consisting of a stent and a matching specially marked plastic tag. JawRef is formed, customized and tested for fit directly on the patient's jaw or on a plaster model in minutes. The patient wears the JawRef during the CT scan and again during the surgery. Using a proprietary method, Navident is able to continuously register JawRef's position during surgery with its appearance in the CT scan automatically, quickly and at a very high precision.

**4. An optical position sensor** which detects the special patterns printed on the DrillTag and JawTag and constantly reports their relative positions, to a small fraction of a millimeter, to the Navident software.



DrillTag



JawRef / JawTag



Optical Position Sensor

## Clear benefits of dynamic guided implantology

- **Reduces errors.** Implants are placed more accurately than freehand, providing increased safety and improved esthetics.
- **Enables flapless drilling.** Reduces chair time, patient trauma, pain, and recovery time.
- **Reduces need for bone augmentation.** Saves time, cost, pain and hassles.
- **Increases surgeon's confidence and reduces anxiety.**
- **Maximizes flexibility.** The plan can be modified at any time, even during operation.
- **Attracts patients and referrals.** Navident provides a clear and visible competitive advantage.

Dynamic navigation systems have been successfully tested since the early 2000s, and proven to provide these benefits in numerous papers. They have not gained widespread use, however, mainly due to their high purchase price and to usage difficulties caused by their immature design. Navident is different. It is affordable, practical and robust.

## Simple workflow

**1** To allow Navident to provide accurate guidance, the dentist fits the JawRef stent to the patient's jaw in a chair-side process that takes only a few minutes. No lab is involved, and the stability of the fit can be immediately evaluated to ensure predictable results. When a plaster model is made and guide teeth are indicated, JawRef can be fitted to the plaster model, retaining the guide teeth in place for scanning.



**2** The patient is CT-scanned with the JawRef in place, as with any CT-guide stent. Navident is compatible with all dental CBCTs on the market, including small field ones. The CT data is loaded into Navident through either a portable storage medium or via the network.

**3** The surgeon then plans the implants' placements by adjusting the size, length and pose of each implant within the CT image. Navident is compatible with any implant type and size available on the market. Planning is saved with the scan, and can be modified during surgery.

**4** Prior to start of drilling, the drill axis and tip are calibrated in a simple motion. During surgery, Navident automatically detects the drill's location and angle. When the drill approaches a pre-planned implant location, Navident provides a cross-hair display that guides the surgeon towards precisely locating the planned entry point, adjusting the drill axis to the planned angle, and drilling to the planned depth. Planning can also be done "on the fly" using Navident's real-time visual feedback showing the bone densities in the region in front of the drill's tip.

Unlike with static mechanical guides, the drilling site remains open and visible. There is no friction with a sleeve which reduces tactile feedback and increases wear, and no additional risk of overheating due to insufficient irrigation. Also, unlike with such guides, the accuracy of the navigation can be validated easily by touching visible surfaces and ensuring the tip is shown correctly on the navigation screen.

A single one-hour appointment may be sufficient, in uncomplicated cases, for a complete Navident-guided procedure, including JawRef fitting, scanning (on site), planning, flapless guided drilling and implants insertion.

# Simple Workflow

# Navident

## Accurate and affordable

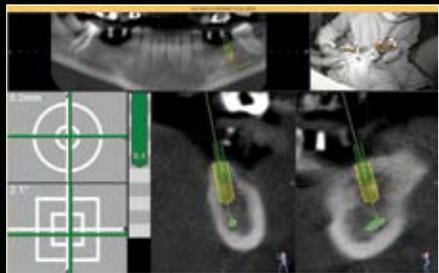
With its high precision optical tracking, tightly controlled production tolerances and fully automated volumetric registration algorithms, Navident is a highly accurate dynamic implantology system.

What good is this accuracy if its cost is out of reach? Navident's purchase price is incremental to that of a CBCT scanner, and its procedure kit's cost, much lower than that of custom static guides, can be easily included in the implantation procedure's pricing to patients who gain a faster, better, less painful treatment.

*Navident is approved for commercial sales and distribution in Canada by Health Canada. Additional regulatory clearances for EU in progress; please contact Claron Technology.*



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## Claron Technology

120 Carlton Street  
Suite 217  
Toronto, Ontario  
Canada M5A 4K2

Pieter Ballewijnstraat 1  
3500 Hasselt  
Belgium  
Tel: 0032 475 75 52 26

Email: [info@clarontech.com](mailto:info@clarontech.com) • [clarontech.com](http://clarontech.com)