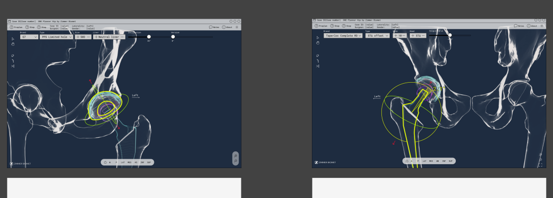
History of the design process (reads top to bottom)

Version

v1 — Apr 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other

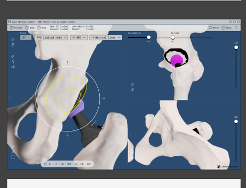


Cup inspector: Initial screen, the entire hip system is displayed in semi-transparent form so the user can locate the cup in a free-form.

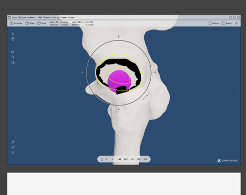
Stem inspector: Initial screen, the entire hip system is displayed in semi-transparent form so the user can locate the stem in a free-form.

v2 — Apr-May 2021

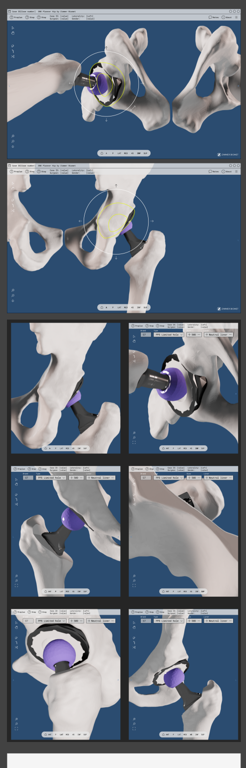
Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other



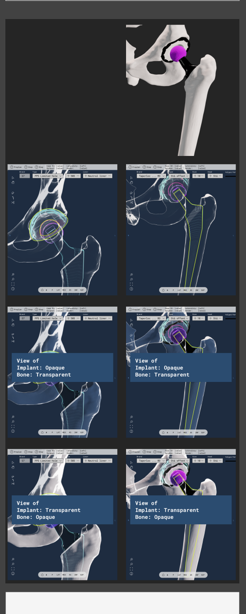
Cup inspector: Opaque bones are introduced as well as the idea of multiple viewports looking at the same object. The Blue ZB background is also established.



Full screen mode of a viewport is brought as a likely necessity.



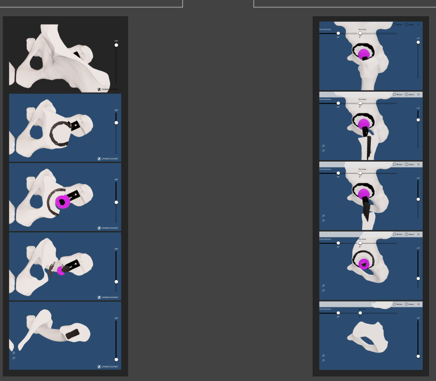
Multiple standard cameras are also inserted into the design as a likely need for the maximized and minimized mode of the viewport



Stem inspector: The concept of being able to make either the bone or the implant (or both) semitransparent is brought into the design.

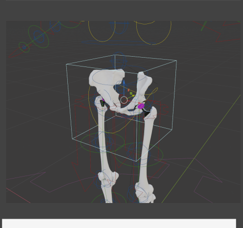
v3 — Jun 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other



Cup inspector: Slices for the cup within the viewport were made possible

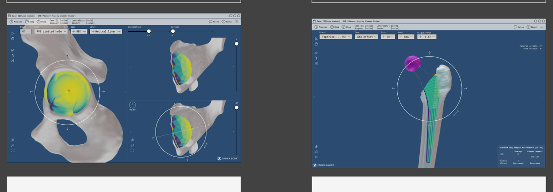
Stem inspector: Slices for the stem within the viewport were made possible



Motion simulation: First efforts of motion simulation were made.

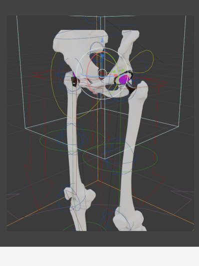
v4 — Jun - Jul 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other



Cup inspector: Cameras for the acetabulum are adjusted. Fake-heatmaps are introduced into the design as well as the hour navigation of the acetabulum.

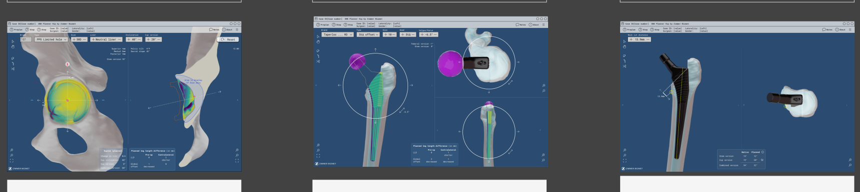
Stem inspector: The stem inspector with a fake-heatmap is introduced (full screen as well as split screen views)



Motion simulation: Many of the issues in motion simulation were fixed so the bone model can do what is intended.

v5 — jul - Aug 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other



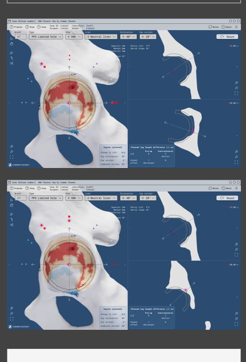
Cup inspector: The concept of hour navigation is refined. A viewport is removed and now the slices of the hours produce a flat surface on the bone. Now the hours are meant to also slice through the center of the acetabulum.

Stem inspector: Stem inspector is refined now all viewports have the stems and interior bone visible. Cameras are adjusted so the user can see the flat surfaces of the stem and determine the best position.

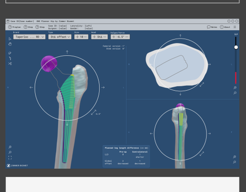
Neck cut inspector: The Neck cut inspector is introduced in the user flow.

v6 — Aug 2021

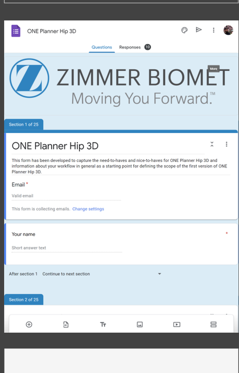
Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other



Cup inspector: Real heatmaps are introduced as well as flat slices for the viewports. Now each hour will have a single slice. The controls to navigate between hours were also refined and background bone was removed to allow the user to focus.



Stem inspector: The superior view of the stem is now in line with the developments of the cup. It is flat and it displays the volume of the stem as well as a slider that marks where the problems are.

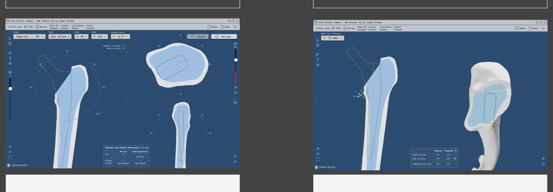


Other: Creation of the 1st Survey to be answered by: Kamath, Miller, Liu, Takao, Patel, Middleton, Kendoff, Masse, Toy and Lawrie

(https://docs.google.com/forms/d/1GtcE9l_xYujPLZGQcHF3J5SOQsF-oodwWhp7bAD_Sw/edit#responses)

v7 — Aug 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other

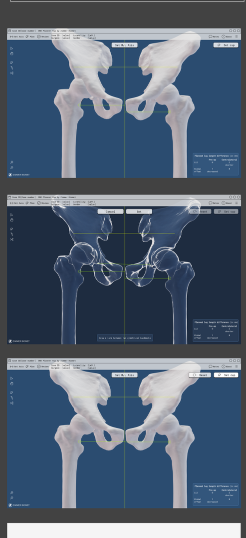


Stem inspector: Projections have been simplified to what is really needed. Slices of the bone have been revamped to make it easier to visualize where the stem touches the outer wall of the femur.

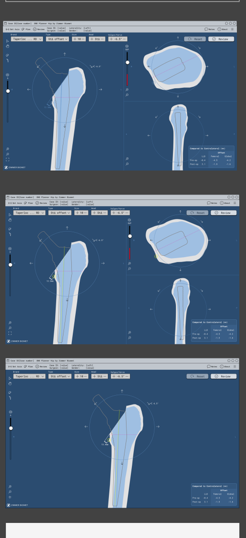
Neck cut inspector: In line with the changes of the Stem angles and projections have been simplified. Now the femoral neck cut shows only a slice in the left-viewport.

v8 — Sep 2021

Case preview | Cup inspector | Stem inspector | Neck cut inspector | Motion simulation | Approve | Other

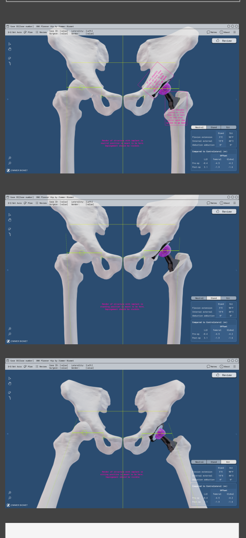


Case preview: Flow to set your M/L Axis has been incorporated into the core flow of the application.

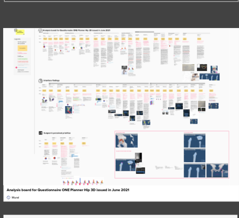


Stem inspector: The femoral cut inspector is now part of the Stem inspector. The full screen mode is now in line with the rest of the prototype.

Neck cut inspector: Now it is part of the Stem inspector. All further development of this screen will happen there.



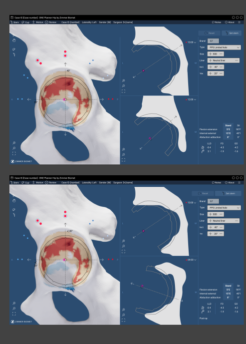
Motion simulation: 1st version of ROM was created as a separate flow.



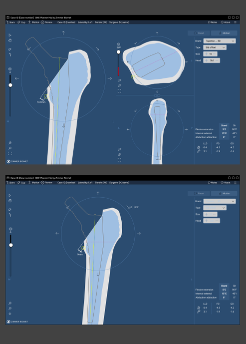
Other: Response analysis for the questionnaire issued back in Aug was analyzed.

v9 — Oct 2021

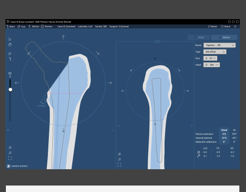
Case preview | Cup inspector | Stem inspector | Motion simulation | Approve | Other



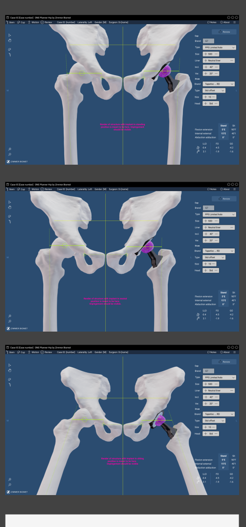
Cup inspector: Controls were moved to the right, there was a redesign on the entire layout.



Stem inspector: In line with the cup inspector, controls were moved to the right as well. There was a redesign to make more space for the viewports.



Idea to expand viewport emerged.



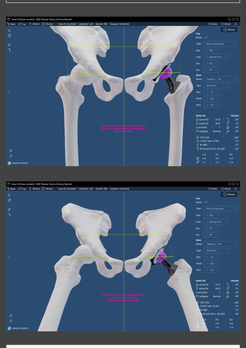
Motion simulation: Controls were added to motion sim. screens to account for the changes that may happen after the implant is placed.

v10 — Oct 2021

Case preview | Stem editor | Cup editor | Motion simulation | Approve | Other

Stem editor: Now the Stem inspector is at the start of the flow instead of the cup inspector. And they are called editors.

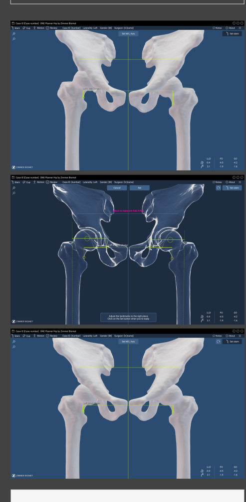
Field have been styled to have a more unified experience.



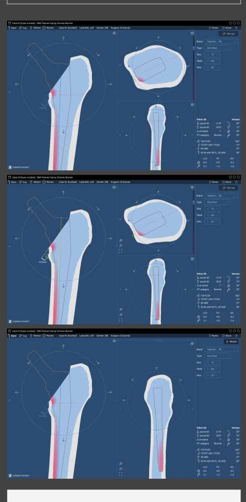
Motion simulation: The data tables were redesigned to display better all the values that need to be present in each scene.

v10 — Late Oct 2021

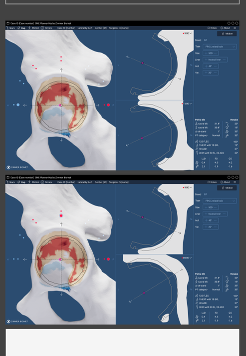
Case preview | Stem editor | Cup editor | Motion simulation | Other



Case preview: Because of uncertainty, it is better to wait for user feedback regarding whether they need to set an axis at all. No further design will happen on this flow until then.



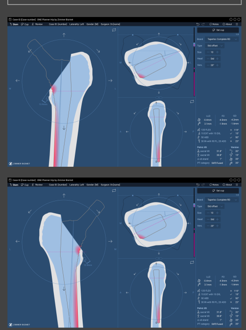
Stem editor: All fields have been styled and functionalities that have no clear user support were removed.



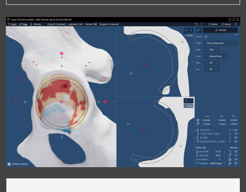
Cup editor: The slices are now accurate representations. All components were styled.

v11 — (Kamath) Mid Nov 2021

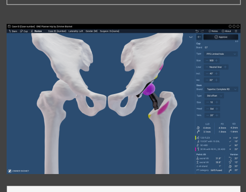
Case preview | Stem editor | Cup editor | Motion simulation | Approve | Other



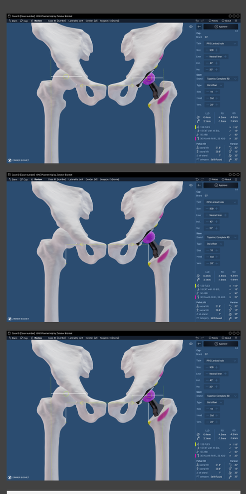
Stem editor: A method to flip views easily adjustments in the design of components for Zeplin. Addition of condyles. Rearrangement of data table.



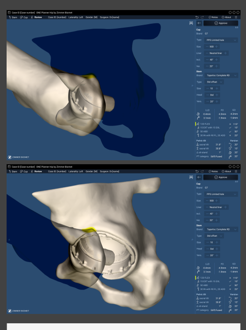
Cup editor: Another method to navigate the slices. New hour selector menu. Rearrangement of tables. Change in the button with the steps.



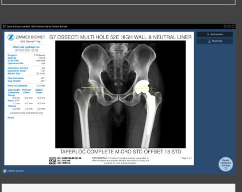
Motion simulation: Change of controllers' style. Rearrangement of data table. Markers of the impingement areas. Recoloring of the impingement areas.



Addition of the way that landmarks are visualized and interacted with.



Individual tests like 120 FLEX are now visible.

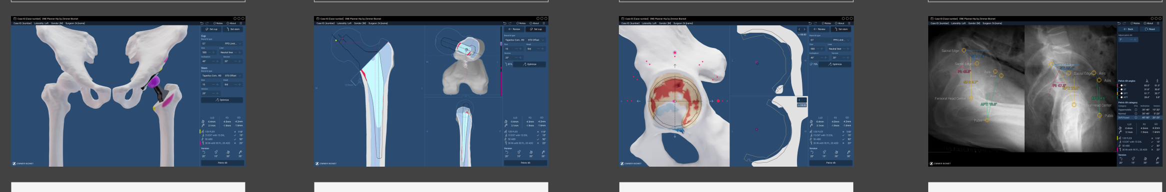


Approve: Introduction of Approval of report screen

Other: Response analysis for the questionnaire issued back in Aug was analyzed.

v12 — End of Dec 2021

Case review | Stem editor | Cup editor | Pelvic tilt | Motion simulation | Approve | Other

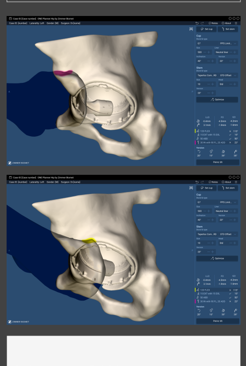


Case review: Data tables have been updated. Button for Optimize and Pelvic tilt were added. Navigation changed, now this is the landing screen of the app. Micro interactions were added.

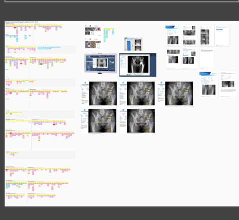
Stem editor: Data tables have been updated. Button for Optimize and Pelvic tilt were added. Lines in the transversal view were changed. Stem % coverage was added. Navigation changed. Micro interactions were added.

Cup editor: Data tables have been updated. Button for Optimize and Pelvic tilt were added. Cup % coverage was added. Navigation changed making this a subsection. Micro interactions were added.

Pelvic tilt: New screen, pelvic tilt and all its data is now managed in this separate screen. Micro interactions were added.



Motion simulation: Selection of ROM test is now visible. Data tables have been updated. Button for Optimize and Pelvic tilt were added. Micro interactions were added.



Other: Response analysis from panel of surgeons of NOV-DEC 2021