



PRODUCT RELEASE ANNOUNCEMENT

Product Category	Theorem-XR
Product Group	All Associated Products
Release Version	Version Q2 2022

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History

Revision	Update Information
1.0	Version Q2 2022 Release

Note! During 2021 Theorem-XR products have transitioned from a customer focused release cycle to a quarterly release cycle. Version 44.0 was the last customer focused release. The full history of the Theorem-XR Release Notes (formally Digital Realities) is now archived. Going forward, customers will submit their requirement requests via their Theorem Account representative. These will then be considered for inclusion in a future release.

Product Codes

Product Code	Product Description
XRVPPL-U1	Theorem-XR Visualization Pipeline (AKA Theorem Experience Server)
XRVIZ-CA	Theorem-XR Visualization Experience
XRDES-CA	Theorem-XR Design Review Experience
XRFLA-CA	Theorem-XR Factory Layout Experience
XRGAU-CA	Theorem-XR Guides Authoring Experience
XRGOP-CA	Theorem-XR Guides Operator Experience
XRREV-DV	Desktop Experience - Visualization
XRREV-DR	Desktop Experience - Design Review
XRREV-FL	Desktop Experience - Factory Layout
XRREV-GA	Desktop Experience - Guides Authoring
XRREV-GO	Desktop Experience - Guides Operator
XRARR-CA	Theorem-XR ARR Experience



Product - Distribution Media

CD images of the latest release are available from the following download sites.

Product	URL for .msi installer and install package download
Visualization Pipeline	20220630
VR Client Support	V2022.5.2
Quest 2 Untethered Support	V2022.5.2
Desktop Experience Support	V2022.5.2
HoloLens 2 Support	2022.6.2 – use direct link or Microsoft store
AR Android Client Support	V2022.5.2
AR Windows Client Support	V2022.5.2
AR Apple Client Support	V2022.5.2 – App Store
TVP C# API	2022.6.1
Unity Editor Interface	Q2-2022
Unreal Engine 5 Editor Interface (beta)	Q2-2022

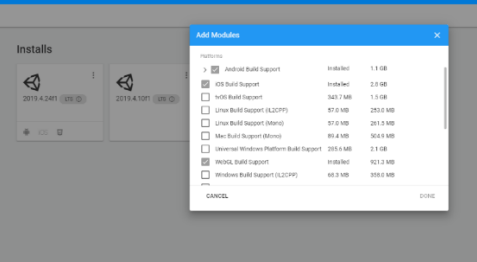
Theorem-XR Online Documentation

Click to review the [User Guide](#)



New Features / Enhancements

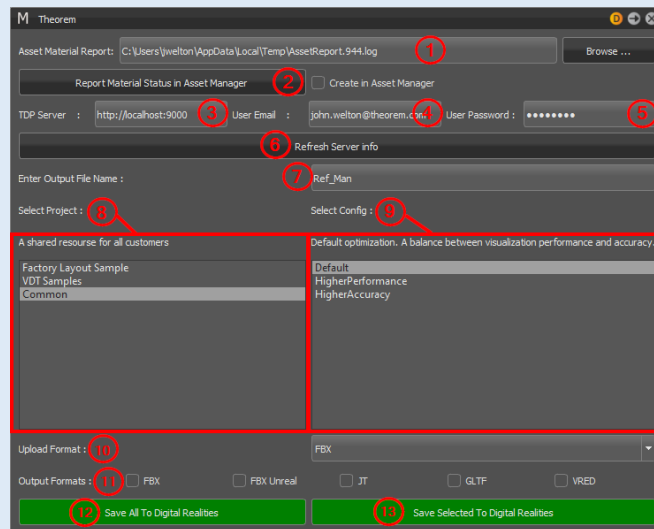
The following new features or enhancements have been introduced with this release.

Ref ID	New Feature / Enhancement Description
Theorem-XR Visualization Pipeline (TVP)	V202200630 – TheoremVisualizationPipeline_Q2-2022.zip
	<ul style="list-style-type: none"> ● TVP : Optional User Registration for AD Users (XR-972) <ul style="list-style-type: none"> ○ Web config setting included to optionally allow to restrict access to the Registration options on the Login page ● TVP Enhancement - UAB Output target platforms (XR-933) <ul style="list-style-type: none"> ○ TVP UAB output now has a dropdown containing the available platforms. The specified platform is passed to the process for output of that type. <p>It must be ensure that the Unity instance hosted with TVP has the modules for building needed before models can be processed of the desired type:</p>  ● Bug when using combine & collapse_level 0 (XR-910) <ul style="list-style-type: none"> ○ Resolved an error throwing an error in vwr_dr and vwr_jt when using the above options. ● Extended C# API to include Add User (XR-880) <ul style="list-style-type: none"> ○ Added function to retrieve roles from TVP that can then be used when creating a new user through the API. API available on page 3 of this document. ● VRED : Allow Upload from a VRED client directly to the TVP server (XR-876) <ul style="list-style-type: none"> ○ Thereon VRED UI has been updated to include a selectable option that will allow for the upload of an FBX file rather than a VRED vpd file thus eliminating the need to have VRED on the TVP server host machine.



- Installing the plugin:
 - Open a Command Prompt and run `\Utilities\Autodesk\bin\interactive_vred_plugin_installer.cmd`
 - The script will check to see if the required directory exists, if it does not it will ask if you wish to create it.
 - Then you will be asked if this is a Server install or local install.
 - Server Install refers to being installed on the same server as TVP
 - Local install refers to TVP being on another computer.

- Using the plugin
 - Start VRED
 - Go To View and select Terminal
 - This will be used to see what is happening as selections are made.
 - Go to Scripts and select Theorem to open the panel:



1. Name and location for the Asset Material Report log file
2. Button to write report into the log file
3. TDP Server: URL
4. TDP Server: User Name
5. TDP Server: Password
6. Refresh Server Info
 1. Select to connect with server
7. Output File Name – Name of the TDP file to be sent to server – Manual entry
8. Select Project – A list of the server projects to upload data



- 9. Select Config – Displays the list of pre-defined optimization configurations from the server
- 10. Upload Format – Display only, cannot be modified
- 11. Output Formats – Select additional format to export
 - 1. Note these options are not exposed from the server API. Although these options appear in the list, the server may not be licensed to export what is selected. They're hard coded in this interface.
- 12. Save All – Sends the entire assembly to TVP
- 13. Save Selected – Sends only the node selected from within VRED to TVP

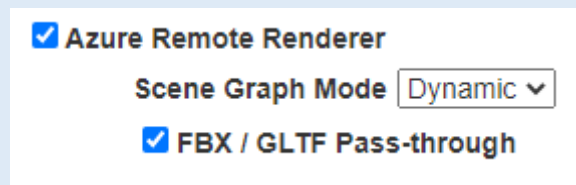
- **TVP: ARR client interpretation of generated ARR files (XR-817)**

- When a model is uploaded for ARR use. A client property is applied to determine what is made visible in other client apps. Property definitions below:

ARR Upload Type Description	Property Key
Non Optimised ARR / Non Optimised BIN	ARR Non-Opt + BIN Non-Opt
Non Optimised ARR / Optimised BIN	ARR Non-Opt + BIN Opt
Non Optimised ARR / No BIN	ARR Only

- **TVP: ARR FBX Upload to ARR only (XR-816)**

- FBX is a native format accepted by Microsoft Azure Remote Rendering. This new option allows a user to upload an FBX only to ARR (not generate a Theorem bin file). A dummy thumbnail is generated to allow a user to launch this model into ARR. To use, select following option from “Visualization Pipeline Outputs” menu :

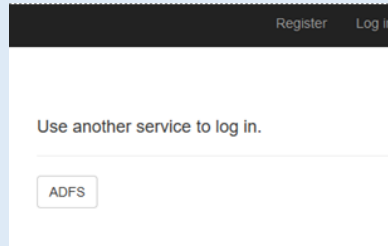


- **TVP: ARR FBX correct format for cross platform collaboration (XR-815, XR-814, XR-770)**

- A user can collaborate both the BIN and FBX file in ARR in the same orientation across platform. The structure will match, so manipulating components will be OK.

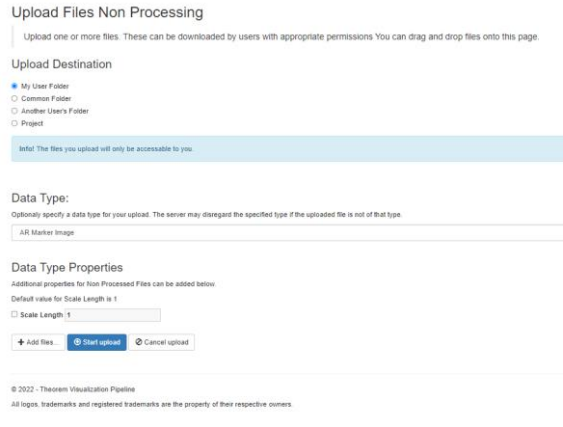


- **TVP : Change OpenIDconnect button name to ADFS Login in Login page (XR-771)**
 - Confirmed that changing the OpenIDConnect provider name to “ADFS (OpenID Connect)” did not break the authentication mechanism (that text appears on the button). Works with AzureAD, ADFS.



- **TVP : Checklists should be allowed to be created by the Program Manager role (XR-763)**
 - Extended Program manager role to include checklist creation in its realm.
- **GLTF - output format GLB from TVP (XR-757)**
 - Added checkbox to gltf additional output which allows user to select exporting as .glb type.
- **Unreal Engine 5 Editor Interface (XR-607)**
 - The Unreal Engine 5 plugin allows for GLTF/GLB models from the TVP to be downloaded directly into the currently loaded UE5 project. These models can be placed into the current scene or stored in the content drawer.
- **Invite by email issue (XR-545)**
 - Added the ability to add an email to a project before they have been made a user.
- **TVP : Interface for Marker Support (XR-153)**
 - An AR Marker Image can be uploaded to Non-Processed files which allows the selection of different images in the AR Applications. This supports XR-624 in the client implementation





- **ICEM Ref Manager- Material Mapping Support**
 - Support for ICEM Ref manager and material mapping. Material mapping changes the name of any material used directly in the assembly or via the Variant / Snapshot to another name as defined on the Material Definitions page of TVP. Further to this If the name being mapped to is in the VRED Asset Manager it is then synced to the Asset Manager definition.

Usage document can be reviewed here:

[TVP ICEM Ref Manager_VRED.pdf](#)



<p>Theorem-XR for VR</p> <p>&</p> <p>Theorem-XR for Desktop</p>	<p>V2022.5.2 - TheoremDesktop_Q2-2022.zip V2022.5.2 - TheoremVR_Q2-2022.zip V2022.5.2 - TheoremVR_Quest_Q2-2022.zip</p> <ul style="list-style-type: none"> • Guides - Multi-Select for Groups (XR-938) <ul style="list-style-type: none"> ○ Functionality included to allow a user to select multiple components to group and move. <p>To access the groups panel, when hovering over a node of an assembly (can be attached or detached), the button appears on the Author Panel next to the name of the node and the Product Structure Panel button.</p> <p>In VR, the groups panel is now a floating panel, rather than part of the left-hand-attached author panel.</p> <p>The panel has the following pages:</p> <ul style="list-style-type: none"> ▪ Groups Listing Panel. This should show when first opened and lists any existing groups. 2 buttons - 'Create New Group' and 'Add to Existing Group' ▪ Create New Group - this implements the feature of the ticket. Set a name and then click multiple parts on the assembly - they should highlight in yellow and be added to the list on the panel (and can be removed from this list). 'Create Group' to confirm. ▪ Add to Existing Group - from here choose from the existing group listing to add a currently selected node to ▪ Edit Group - Get to here by selecting a group from the list on the Groups Listing. Groups can be deleted or renamed from here. • Guides - Improve Object Selection in Author Mode (XR-920) <ul style="list-style-type: none"> ○ Improved highlighting of small parts in Guides. Improvements allow: <ul style="list-style-type: none"> ▪ Hovering over an object in guides author mode will show an outline ▪ Clicking on the object will show a persisting outline and show the object on the info panel ▪ For assembly nodes, the thumbnail on the info panel should be an accurate representation of the node selected.
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- **Guides - Integrate Product Structure Panel (XR-924)**

- Product Structure Panel added to Guides for Theorem-XR for desktop and VR

A hierarchy button will appear on the Info Panel (near the name of the part) when hovering over an assembly node. This will summon the Product Structure Panel and expand nodes to show the node that it was opened from.

Selecting a node on the tree should will it on the info panel.

- **Thumbnail Generator : Advanced Texture Support (XR-877, XR-792)**

- Updated Thumbnail Generator to support the newly supported texture formats in RE and VR, these being:

- Transparent Albedo Textures
- Normal maps
- Emission maps

- **XR Collaboration : Networked Manipulation Box (XR-874)**

- Resolved issue so that the manipulation box awaits the completion of the networked swap material entries to ensure that all materials have been applied to the model which will be encapsulated by the manipulation box, otherwise it could result in the model not being fully sectionable.

- **Sectioning Shader Texture Support (XR-866, XR-360)**

- Updated High quality sectioning shader to support the new texture capacity

- **360 Viewer : Enhancements (XR-865)**

- Users can now enter panorama mode from any world scene without it causing an issue
 - If the user enters a panorama from a non-grid world scene, their world scene will be briefly loaded



as the default grid (which shouldn't be noticeable to the user) before the panorama is loaded

- When the user exits the panorama, their world scene should be loaded back as the world scene they had before loading the panorama
 - Viewing direction is no longer reset when the user teleports to a waypoint in Panorama mode
 - The waypoints panel is now on by default when the user enters Panorama mode
 - In kiosk mode, panoramas will now load in if they are saved in the cache, even if they weren't uploaded to the "Common" folder
- **Guides - Walking Up Tree and adding to groups (XR-844)**
 - Resolved an issue where when walking up the tree and adding a node to group. This resulted in the ghost having an incorrect position when created and the nodes not always jumping to the correct position with relation to the first node in the group when created.
- **Incorrect measurement scaling in tabletop mode (XR-835)**
 - The only rulers the user is now able to create while in tabletop mode are:
 - Point to Point rulers where the start and end points are both on models
 - Offset rulers where the start and end points are both on models
 - Position rulers placed on models

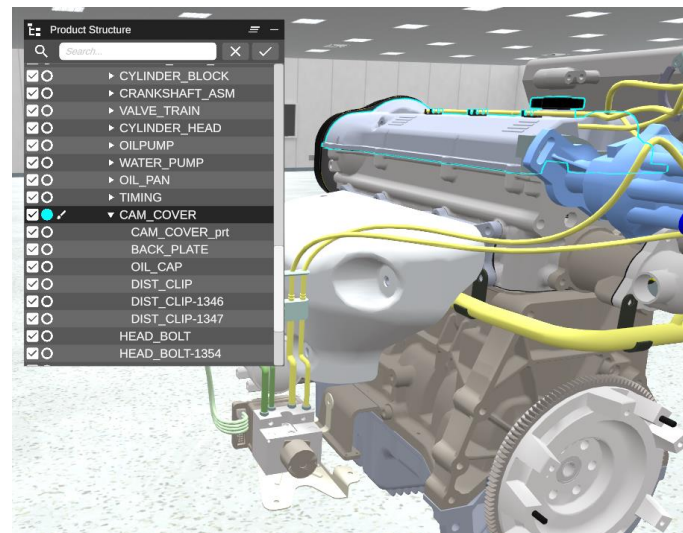
If the user tries to create any other ruler in tabletop mode, the ruler will be deleted
- **TheoremRE - Make Keyboard Controls viewable from within the app (XR-820)**
 - A new UI element has been included to display a list of the controls to the user. It is accessible via the settings menu in

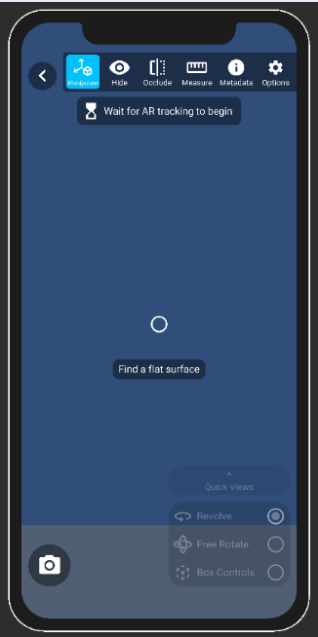


StartUp, and the overlay menu which pops up when the user hits escape when in an experience.

Controls	
Movement	
Move Forward	W
Move Back	S
Move Left	A
Move Right	D
Rotate View	Mouse Movement
Move Faster (Hold)	Left Shift
Toggle Fly Mode	Middle Mouse Click
Fly Up	Space
Fly Down	Left Ctrl
Interaction	
Select	Left Mouse Click

- **Tools snapping to ghosts in later steps (XR-793)**
 - Resolve an issue where it was possible for a tool that occurs in two different steps to snap the wrong ghost.
- **Product Structure Viewer (XR-616)**
 - Included a product structure viewer for a nominated Assembly in all clients. This view allows a user to see the Assembly Product Structure and hide/show individual components.



<p>Theorem-XR for AR</p>	<p>V2022.5.2 - TheoremAR_Android_Q2-2022.zip V2022.5.2 - TheoremAR_Windows_Q2-2022.zip V2022.5.2 – Apple – App Store</p> <ul style="list-style-type: none"> • Theorem-AR - Mobile Devices with screen notches and front facing cameras obscure UI elements (XR-939) <ul style="list-style-type: none"> ○ All UI elements throughout Theorem-AR should now correctly react to the 'UI safe area' reported by the device. Any elements that would be out of the safe area now get automatically moved and adjusted to display correctly, and be fully interactable. <p>Example iPhone X:</p>  • AR Applications aren't loading from cache when on a network (XR-923) <ul style="list-style-type: none"> ○ Problem with date comparison identified on AR, where DateTime resolution for cached file date did not include milliseconds accuracy, whereas TVP models listing modified date does. This resulted in the logic to evaluate when a model should be redownloaded failing on Android (may have been iOS). <p>Issue resolved by limiting DateTime comparisons to use seconds as the highest degree of accuracy for comparison, meaning that files will now not redownload when cached.</p>
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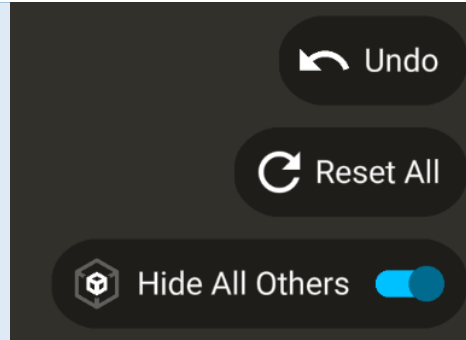


- **Theorem-AR - Update ARFoundation implementation (XR-919)**
 - Light Estimation issues resolved - light direction will now be more accurate to the values reported from AR Foundation. When not using Light Estimation, the light used should now be positioned consistently from the camera position, with no shadows cast
 - Updated user facing messaging about quality of AR tracking, with prompts for multiple not-tracking states, including, poor lighting, fast device movement, no plane feature points detected.
 - Major update to AR Foundation experience developed, which revamps the initial model placement UX flow, now allowing the user to aim their device at a detected plane, and tap to place at the location indicated by a new Placement Indicator item. This is a blue border which exactly represents the position and rotation that the model will be placed at when the user taps.
 - A virtual shadow plane has been introduced, which gives the illusion of the augment models casting shadows on to the real world. This gives a better sense of real world presence for augment objects. The shadow plane is only enabled when Light Estimation is enabled.
 - Added a 'Reset AR Session' button to the AR options menu, which clears all detected tracking planes, and resets the AR tracking context. This will ensure that upon returning to AR Foundation, there is no longer a mass of previously tracked planes, stacking on top of each other creating visual noise
 - AR Foundation planes now automatically hide after model placement, and the UI toggle for 'Plane Visualisation' has been removed from the Options menu.
 - AR Shadow Plane now tracks the model, to ensure that if the model is laterally moved or rotated, the fake shadow plane will always remain below.
 - Fixed issue with screenshot capture when viewing AR Shadow Plane, which was creating semi transparent pixels in captured image.
 - Reordered manipulation modes to default to Revolve first, as this more useful immediately after placing the model in AR Foundation.



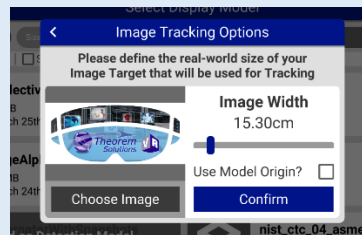
- **Theorem-AR - Advanced Texture Support (XR-915)**
 - Multiple texture map formats now supported for Theorem-AR
- **Bug - Marking up an image results in the anchored position being reset and the layout rotated. (XR-913)**
 - AR Foundation tracking context will now be kept when in Image Markup, so as long as the device is still pointing in a similar direction when exiting Image Markup, the anchored position will be maintained
- **Bug – Manipulation box scaling (XR-889)**
 - Bounding box handles will now appear as a constant size for all content
- **Theorem-AR - Multi-model Load Support / Layout functionality (XR-807)**
 - Layouts can now be selected as an experience for the Display model in all AR modes (model tracking, image tracking and advanced AR). A user can load a pre-defined Layout achieved in Theorem-AR, with all Scenery, Components and Poseables loading correctly relative to the base model.
 - The model selection UX has been updated to include experience selection, as well as modifying user-facing phrasing of initially selecting the ‘Display Model’, and optionally choosing an ‘Alternative Tracking Model’, for model tracking contexts
- **Theorem-AR - Isolate Component option (XR-806)**
 - Isolate Component functionality added to Hide interaction mode in Theorem-AR. Presented to user as a toggle, which when set on, will hide all other components, and only keep the selected part active. With the toggle off, Hide mode works as it always has.
 - Both Hide and Occlude mode have had an undo stack and undo buttons added, to allow for individual commands to be undone, rather than the previous offering of a Reset All button, which provided no granular control.





- **Theorem-AR : Improved Image Tracking support with server-based image listing (XR-624)**
 - Improved listing interface added to Theorem-AR, to allow for multiple potential tracking images to be displayed and selected by the user. The user is presented a listing of all Non-Processed Data of type ARMarkerImage, as well as the current Company Logo defined on TVP.

This listing can be navigated by selecting the new ‘Choose Image’ button in the Image Tracking Options interface, after selecting a model and requesting Image Tracking as the AR type.



Images can be viewed at a large size, and navigation to the left and right is possible by pressing the arrow buttons on the sides of the image preview. The View All button can be pressed to view all possible tracking images in a grid view, for faster navigation

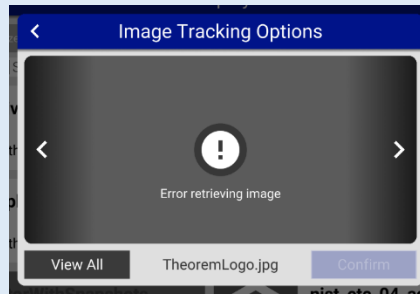


Once an image is confirmed, all other UX flow is the same. When returning to Model Selection from the AR mode, the



previously used tracking image is remembered, to ensure the user does not have to scroll through their images again.

If a tracking image from TVP cannot be understood as a valid image, the user will be informed of this via an error message. An invalid image like this cannot be selected, and the user should have no way to attempt to use this as a tracking image in the AR scene.



<p>HoloLens 2 Support</p>	<p>V2022.2.5 - TheoremHL2_Q2-2022.zip</p> <ul style="list-style-type: none"> • General <ul style="list-style-type: none"> ○ Fixed PDF menu listing item text (QA-193) ○ Fixed comment highlighting while recording (QA-194) ○ Fixed Undo/Redo/Undo All for ARR models (QA-195) ○ Buttons are initialised correctly to prevent highlight and press if inactive ○ Inclusion of the Render Property "QR_CODE_OFFSET" to allow a user to offset the model load from the origin when positioning via a QR Code [RP-72]. <ul style="list-style-type: none"> ▪ Hover over the QR Code to show a guide line (yellow) from the QR code centre to the model attachment point (green) - also shows the model origin (white) and offset line (red) if set. ○ Manipulation Box: prevented from being too small, size controls have been improved for large flat models, addition of recalculate controls when scale changes. ○ Checklist place pin now deactivated when selecting another menu (QA-250) ○ Checklist Dictation redesigned to show one panel only (prevents issues with overlapping UI elements) (QA-257) ○ Checklists Pin toggle switched off on menu selection. (QA-250) ○ Swap menu toggle switched off in collaboration when another panel is active. (QA-251) ○ License feature name fix. (QA-244) ○ Added new Tools feature for drawing in layout experiences [RP-69]
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- **Tools**

- Tools: colour picker wheel panel redesigned. (QA-249)
- Tools menu closed cleanly when selecting another menu (QA-251)
- Tools: now detects hand lost/found events and refined gesture handling. (QA-252)
- Tools: colour picker buttons are larger and spaced further apart (QA-254)
- Tools: colour picker gradient UI fixed. (QA-255)
- Tools: colour picker button icon changed and text added. (QA-256)
- Tools: when drawing, a sound is played when starting and stopping and the pointer line is hidden from view.
- Tools colour picker wheel move forward to fit button press depth. (QA-249)
- Tools now sets colour when sending over network. (QA-276)
- Tools is switched off on host change. (QA-277)
- Tools colour picker no longer shows alpha setting. (QA-278)

- **Azure Spatial Anchors - (Beta)**

- ASA: Implemented ASA license check [RP-63].
- ASA: Implemented Delete Spatial Anchor feature.
- ASA: Show owner icon on top-right of marker.
- ASA: Better handling and logging of sensors.
- ASA: Persist automatic anchor saving setting
- ASA: Persist occlusion setting
- ASA: Search for anchors: Changed "Found x Anchors" to "Checking x Anchors..."
- ASA: Display the sensor status when searching.
- ASA: If loading from search, show the ASA menu even if the Use ASA toggle state is off
- ASA: When saving an anchor, use a fresh local anchor to prevent deleting the new anchor instead of the old one.



Known Limitations and Restrictions

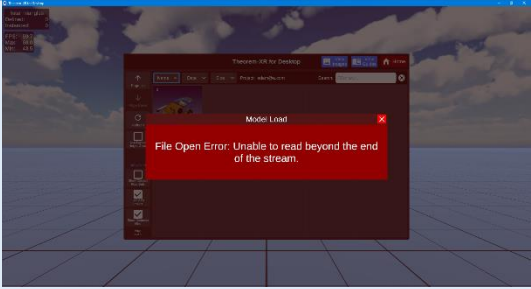
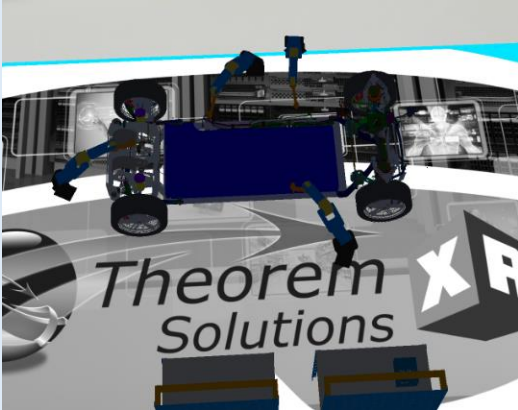
The following limitations and restrictions have been identified during final testing prior to release and will be resolved for a future lock-down:

Ref ID	Limitations and Restrictions
<p>XR-69</p>	<p><i>Exporting a Layout as JT</i></p> <ul style="list-style-type: none"> • For the JT export to function correctly, a user must have the following minimum version Theorem JT translator installed: cdCAD_24.1_CA5JT_WIN.01. If this is not installed, a user may see a JT with empty (2KB) subordinate JTs created • If a user presses the “Output as JT” on a chosen layout, but a JT is not generated and the server appears to be unresponsive, the service that runs this capability may hang. To reset this, the following steps should be taken: <ul style="list-style-type: none"> ○ Launch the “Task Manager”, on the “Details” tab locate “FBXGenerator.exe” ○ Right click on the FBXGenerator.exe and select to “End Task” and select to “End Process” when prompted ○ Change to the “Services” tab and locate “Theorem Experience Server Service” ○ Right click on this service and click to “Stop” then “Start” the service. ○ Once running, navigate back to the server page and select to “Output as JT” again • A user must have a valid FBX_DEFAULT license feature to use the JT Export option
<p>XR-496</p>	<p><i>Migration from SQLite to MS SQL Database</i></p> <ul style="list-style-type: none"> • The existing data in the MSSQL database is replaced (not merged)! • Once complete any existing logins will no longer be valid. It will be required to sign in as a user imported from the SQLite database. • The SQLite database file is moved afterwards to prevent an admin re-running this procedure at a later date and losing all data added in the interim period. Ensure that the SQLite database file is backed up




<p>XR-507</p>	<p>New TVP Licensing</p> <ul style="list-style-type: none"> On the licensing page a new menu item is listed: <i>“FlexLm license features that limit this server's functionality (including license and license features for clients)”</i> <p>If legacy licensing is being used, expanding this will show several server license features, all listed as false. These values do not apply to legacy licensing, so the information will not be true for your server.</p> <ul style="list-style-type: none"> To use shrink wrapping successfully a server will need access to the following license features: <ul style="list-style-type: none"> Legacy – DRFBX-U1 New - XRFBX-U1
<p>XR-184</p>	<p>New Client Licensing</p> <ul style="list-style-type: none"> To successfully use a new Checklist license (XRCHK-U1) a user must also have a valid comments license (XRCOM-U1)
<p>XR-622</p>	<p>Theorem AR - Offline Licensing</p> <ul style="list-style-type: none"> Tablets do not yet support offline licensing usage.
<p>XR-636</p>	<p>Vive Focus 3</p> <ul style="list-style-type: none"> Controllers are shown, but hand representation is not included at this release.
<p>XR-712</p>	<ul style="list-style-type: none"> Client preference ‘EnableUnrestrictedApplicationMirror’ should be changed to ‘EnableApplicationMirroring’
<p>XR-757</p>	<ul style="list-style-type: none"> If GLB is selected as an output type, it appears in the download list as “GLTF”, when selected, the part is a GLB as required, it is just labelled incorrectly.
<p>XR-817</p>	<p>TVP: ARR client interpretation of generated ARR files</p> <ul style="list-style-type: none"> Currently Theorem-XR for Desktop and VR will list ARR only models. As these don’t have an associated BIN file, if they are a selected a user will be presented with:



	 <p>This is expected behaviour, as the notion of ARR only models is that they are viewed only with ARR.</p>
<p>XR-876</p>	<p>VRED : Allow Upload from a VRED client directly to the TVP server</p> <ul style="list-style-type: none"> When using VRED Pass through, it is known tha some material definitions are not passed through to the output VRED data set. These are AxF materials and Switch materials.
<p>XR-911</p>	<p>Theorem AR - Layouts created and viewed in image tracking look very dark at small scales</p> <ul style="list-style-type: none"> This issue is caused by Unity floating point precision problems that prevent lighting being properly applied to renderers that are largely scaled down. 
<p>XR-938</p>	<p>Guides - Multi-Select for Groups</p> <ul style="list-style-type: none"> Currently not possible to start a group using two parent nodes. To create a group start with two child nodes. After a group has been made parent nodes can be added and you can remove the child nodes that created the group initially. (QA-266)
<p>-</p>	<p>User based licensing – offline licensing</p> <ul style="list-style-type: none"> At this release, the underlying licensing method was updated for user-based licensing to support offline working. If you use user-based licensing and you upgrade to this release, you will also need to



	<p>upgrade all clients. Otherwise you will receive a license error on trying to load the app:</p> 
-	<p>Theorem AR: Movement of measurement tooltips</p> <ul style="list-style-type: none"> • Current measurement labels are fixed in location. They cannot be moved and sometimes may appear inside a model
-	<p>Theorem AR: Apple Device – Can't find host</p> <ul style="list-style-type: none"> • On initial load user receives Apple prompt - allow Theorem-AR to find device on network. Selected OK but app first notes: Can't find host. To resolve a user needs to select OK again to reattempt connection.
-	<p>Theorem AR: Mode change switches camera orientation</p> <ul style="list-style-type: none"> • In landscape mode, switching between Render Mode and AR Mode in Image tracking and display can rotate the camera feed. To resolve rotate device through portrait / landscape mode.
-	<p>Theorem AR: Animation playback speed</p> <ul style="list-style-type: none"> • Animation is tied to device frame rate, this can give the illusion of stuttering in animation replay.
-	<p>HL2: Tools in collaboration</p> <ul style="list-style-type: none"> • Collaboration users can't see each others tools correctly HL2
-	<p>HL2: Duplicated model groups</p> <ul style="list-style-type: none"> • Grouping copy/paste and then attempting to hide one of the copy and pasted models won't hide it for a passive user. As a side effect I couldn't create measurements for a passive user to view between the same model that wouldn't hide and anything else.
	<p>TVP: Database Validation Errors</p> <ul style="list-style-type: none"> • On this install of TVP the database schema needs updating. On installation where a previous database is used. The TVP will report "Database Validation Errors". To resolve these, log in as an admin user and select "Startup Troubleshooter". Then select "Add missing tables and table columns" from the trouble shooter page to resolve:



Startup Error

A problem arose when starting this web application.

Database validation errors

- Database table 'AspNetUsers' is missing column 'PasswordExpired' of type Boolean
- Database table 'AspNetUsers' is missing column 'PasswordChangedUtc' of type DateTime

This will have occurred because of an unexpected change to the underlying database or that an update has not been updated.

For help resolving this issue please visit the following page:

[Startup Troubleshooter](#)

Startup steps:

- AccessDataDir, Completed
- AccessDatabase, Completed
- ValidateDatabase, Failed
- PopulateDatabase, Pending
- CreateManagers, Pending

Database

Compare the structure of the database to that which the Server expects.

Issues

Looks for missing tables or missing columns within a table that are expected by this server but not found within the actual data function until resolved.

- Database table 'AspNetUsers' is missing column 'PasswordExpired' of type Boolean
- Database table 'AspNetUsers' is missing column 'PasswordChangedUtc' of type DateTime

Differences

Looks for some differences in the column datatypes, columns constraints and table constraints. These differences (unless identified permitted to function despite these. For instance the underlying SQLite database stores many datatypes under the same storage ("REAL"). As such if our server expects a double but the value is stored in a "FLOAT" field then this isn't an issue.

- Database table "TemplateInstanceFiles" column Id is of type NVARCHAR rather than nvarchar(128)
- Database table "AspNetUsers" is missing the PasswordExpired column
- Database table "AspNetUsers" is missing the PasswordChangedUtc column

Update

Update the actual database to meet the expectations of the server.

We lock the current SQLite database, copy it then compare checksums to verify that the backup was successful.

If we can't create and verify the backup file then the database update will be restricted to only add missing tables. The SQL console so that your database administrator can review and run them.

Backup location on data directory: C:\TheoremExperienceServerData\Database\SqliteBackup

SQLite Update Scripts location: C:\TheoremExperienceServerData\Database\SqliteUpdateScripts

 Add missing tables and table columns

Database Schema

Compare the SQL table definitions for the actual database to the SQL that would generate the tables expected by the server.

