TechnipFMC

GEMINI®

MANIPULATOR SIM

PROOF-OF-CONCEPT (POC)

Storyboard FINAL V1.0

2022-07-06

Document History

Version #	Date	Written/Revised By	Description
Draft V0.1	2022-05-06	Eric M. Scharf Solution Design Architect	• Initial storyboard draft
Draft V0.2	2022-05-27	Eric M. Scharf Solution Design Architect	• Steps and controller mapping updated to reflect additional client feedback
Draft V0.3	2022-06-03	Eric M. Scharf Solution Design Architect	• Font changed and GUI updated for spacing to reflect change
Draft V0.4	2022-06-08	Eric M. Scharf Solution Design Architect	• Robot arm rotation extents received from client and added
Final V1.0	2022-07-06	Eric M. Scharf Solution Design Architect	• Storyboard finalized

DISCLAIMER: This document – like all storyboards across feature film, episodic broadcast television, interactive software, and other similar media – demonstrates (1) a ***visual approximation*** and (2) an accurate feature set for development of the agreed upon "MANIPULATOR SIM Proof of Concept (POC)" end product.

Please NOTE: This document has been created for both the client and offshore outsource development resources. This document contains no proprietary information.

SPLASH SCREEN

Functionality

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MANIPULATOR SIM

This simulation is designed to competitively challenge and track the dexterity of individual users while they operate a manipulator to successfully position balloons into boxes under specific time constraints. A *unique access code* is required for each user.

Please Input Your Access Code: [ ] ENTER

***DESCRIPTION**: Upon launching the "TechnipFMC GEMINI MANIPULATOR SIM" (a "WebGL" application) from Mosaic's DLG (Digital Learning Group) cloud server, the user is greeted with the above splash screen.*

***PLEASE NOTE**: Clarifying details will be provided regarding the application's official online location.*

DEVELOPERS:

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

TechnipFMC and GEMINI logos are among reference materials being provided.

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MANIPULATOR SIM

This simulation is designed to competitively challenge and track the dexterity of individual users while they operate a manipulator to successfully position balloons into boxes under specific time constraints. A *unique access code* is required for each user.

Please Input Your Access Code: 234567 ENTER

***DESCRIPTION**: The user (without any visual and audible prompting by the application) enters their unique access code within the access code field (by keyboard).*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 234567 ENTER

***DESCRIPTION**: The user selects ENTER (with their mouse).*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 234567 ENTER

Your access code is unrecognized. Ask a supervisor to verify the status of your access code.

***DESCRIPTION**: The application responds to the submitted access code by identifying that code as invalid/unrecognized after comparing that code with others stored within Mosaic's XR Training Management System (herein referred to as the XRTMS).*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 234567 ENTER

Your access code is recognized but not assigned to this application. Ask a supervisor to confirm it is assigned.

***DESCRIPTION**: The application responds to the submitted access code by identifying that code as recognized but "not assigned" to the application (after comparing that code with others stored within the XRTMS). Yes, a user CAN be registered within the XRTMS while also being mistakenly left unassigned to an application within the XRTMS.*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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MANIPULATOR SIM

This simulation is designed to competitively challenge and track the dexterity of individual users while they operate a manipulator to successfully position balloons into boxes under specific time constraints. A *unique access code* is required for each user.

Please Input Your Access Code: 279253 ENTER

Are you [Eric Scharf]? YES NO

***DESCRIPTION**: After finally entering a correct/recognized access code, the application asks the user to confirm their username as correct.*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 279253 ENTER

Are you [Eric Scharf]? YES NO

***DESCRIPTION**: If the user sees an incorrect username, they can select NO (with their mouse).*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 279253 ENTER

If your username is incorrect, ask a supervisor to verify and correct your username.

***DESCRIPTION**: The application responds with a simple alert instructing the user to seek out support from an available supervisor towards verification and correction of their username.*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Please Input Your Access Code: 279253 ENTER

Are you [Eric Scharf]? YES NO

***DESCRIPTION**: If the username happens to be correct, the user selects YES (with their mouse).*

DEVELOPERS:

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Welcome, Eric! Make a selection to get started.

RULES | FREE PLAY | GAME MODE

***DESCRIPTION**: Once the user credentials are confirmed, the user has access to four directions within the application from the splash screen. The user can choose to engage (1) RULES, (2) FREE PLAY, (3) GAME MODE, or decide to (4) LOG OUT (which helps the POC application to track the difference between a user logging out versus being forced out by an internet outage, web browser crash, or operating system failure).*

DEVELOPERS:

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Welcome, Eric! Make a selection to get started.

RULES

FREE PLAY

GAME MODE

***DESCRIPTION**: The user selects RULES (with their mouse).*

***DEVELOPERS**:*

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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The TechnipFMC GEMINI® MANIPULATOR simulation requires a Microsoft Xbox controller, a Microsoft Windows PC (equipped with monitor, mouse, and keyboard), and a modern web browser.

The simulation can be played in one of two ways: **FREE PLAY** and **GAME MODE**.

FREE PLAY *allows* the user to become familiar with how the Xbox controller is mapped and the operation of the TechnipFMC GEMINI® ROV robot arm within a non-competitive environment.

GAME MODE *challenges* the user in TWO competitively-timed activities through three uniquely-timed levels: **EASY, MEDIUM,** and **HARD**.

***One* of those two activities** involves placement of ONE balloon within a randomly identified box (within a larger block of nine boxes) within an open time frame but as fast as possible.

***The other* of those two activities** involves placement of as many balloons as possible within randomly-identified boxes within predetermined maximum time limits.

The balloons (within *both* of those activities) steadily inflate, giving the user an additional time constraint to consider while navigating one or more balloons to their final destinations.

When engaging the TechnipFMC GEMINI® MANIPULATOR simulation, first-time users should allow 30-45 minutes to practice within FREE PLAY and/or successfully complete the competitive activities within GAME MODE.

CLOSE

LOG OUT

RU

MODE

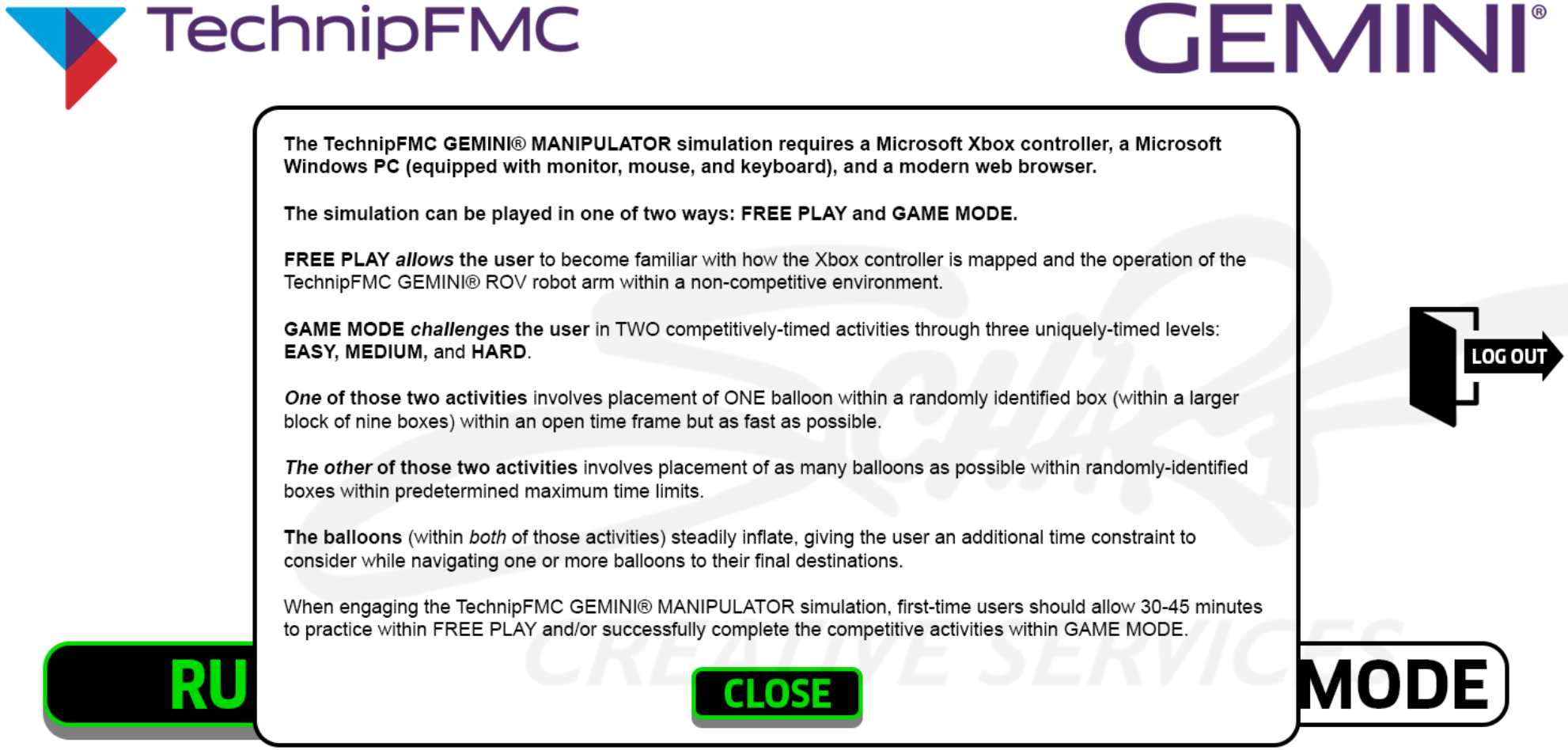
***DESCRIPTION*: An overlay appears describing the basic user rules of the simulation.**

***DEVELOPERS*:**

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

TechnipFMC and GEMINI logos are among reference materials being provided.



***DESCRIPTION*: The user selects CLOSE (with their mouse) when they are finished reviewing the rules.**

***DEVELOPERS*:**

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Welcome, Eric! Make a selection to get started.

RULES | FREE PLAY | GAME MODE

***DESCRIPTION**: After the RULES overlay is closed, the user is free to select RULES again or engage, FREE PLAY, GAME MODE, or LOG OUT as well (all with their mouse).*

DEVELOPERS:

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

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Welcome, Eric! Make a selection to get started.

RULES | FREE PLAY | GAME MODE

***DESCRIPTION**: The user selects FREE PLAY (with their mouse).*

DEVELOPERS:

This POC requires a mouse and keyboard ONLY for splash screen functionality.

Upon receiving access to the application BEYOND the splash screen, the user will require – for FREE PLAY and GAME MODE only – (1) an Xbox controller (for robot arm functions) and (2) a mouse (for UI functions unrelated to the Xbox controller).

TechnipFMC and GEMINI logos are among reference materials being provided.

FREE PLAY

Functionality

***DESCRIPTION**: Upon entry into FREE PLAY, the user will see the robot arm (in the default "stowed" position) and buttons for FIRST PERSON MODE (ON by default), JOINT BY JOINT MODE, HYDRAULICS ON/OFF (ON by default), CONTROLLER LOCKED ON/OFF (OFF by default), and CONTROLLER MAPPING, along with a deep-sea background image (which is the default background image whether the user is in FREE PLAY or GAME MODE). NO timer. NO nine block.*

***DEVELOPERS**:*

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are unrelated to the Xbox controller are operated by the user through their mouse.

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FIRST PERSON MODE

This mode coordinates the *control of the entire arm* to move the tip of the end effector. The game controller is used to *command straight-line paths*, instead of each individual joint.

START = *Hold* to Turn Hydraulics ON
= *Press* to Turn Hydraulics OFF

BACK = *Press* to Activate Controller Locked
= *Hold* to Deactivate Controller Locked

CURSOR PAD:
UP = Relax
LEFT = FP Mode
RIGHT = JBJ Mode
DOWN = Nothing

LT = Backward
LB = Rotate CCW
RT = Forward
RB = Rotate CW

X = *Decrease* Jaws Speed
Y = *Increase* Jaws Speed
A = *Close* Jaws
= *Hold for 6 Seconds* to Lock Jaws
B = *Unlock and Open* Jaws

Right Thumb Wheel = *Turn* Left, Right, Up, or Down
Left Thumb Wheel = *Move* Left, Right, Up, or Down

All UI functions *unrelated to the Xbox controller* (such as CONTROLLER MAPPING, LEVELS, HIGH SCORE, START, EXIT, and LOG OUT) can each be manipulated via a single mouse click.

CONTROLLER MAPPING

EXIT

HYDRAULICS

CONTROLLER LOCKED

FIRST PERSON

JOINT BY JOINT

***DESCRIPTION*: When the user selects CONTROLLER MAPPING (with their mouse) – while in FIRST PERSON MODE – an image of FIRST PERSON MODE controller mapping is displayed. That controller mapping image ALSO includes instructions on HOW the user can engage ALL UI FUNCTIONS *UNRELATED* TO THE XBOX CONTROLLER. Once the user is finished viewing that controller mapping image, the user can deselect (or toggle OFF) CONTROLLER MAPPING (with their mouse).**

***DEVELOPERS*:**

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are *unrelated to the Xbox controller* are operated by the user through their mouse.

***DESCRIPTION**: The user can toggle back and forth between FIRST PERSON MODE and JOINT BY JOINT MODE (using their Xbox controller).*

***DEVELOPERS**:*

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are unrelated to the Xbox controller are operated by the user through their mouse.

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JOINT BY JOINT MODE

This mode allows *control of each individual joint* as traditionally used.

START = *Hold* to Turn Hydraulics ON
= *Press* to Turn Hydraulics OFF

BACK = *Press* to Activate Controller Locked
= *Hold* to Deactivate Controller Locked

CURSOR PAD:
UP = Relax
LEFT = FP Mode
RIGHT = JBJ Mode
DOWN = Nothing

LT = Elbow Down
LB = Wrist CCW
RT = Elbow Up
RB = Wrist CW

X = *Decrease* Jaws Speed
Y = *Increase* Jaws Speed
A = *Close* Jaws
= *Hold for 6 Seconds* to Lock Jaws
B = *Unlock and Open* Jaws

Right Thumb Wheel = *Roll* CCW, CW, Pitch Up, Down
Left Thumb Wheel = *Azimuth* Left/Right, Shoulder Up/Down

All UI functions *unrelated to the Xbox controller* (such as CONTROLLER MAPPING, LEVELS, HIGH SCORE, START, EXIT, and LOG OUT) can each be manipulated via a single mouse click.

CONTROLLER MAPPING

EXIT

HYDRAULICS | CONTROLLER LOCKED | FIRST PERSON | JOINT BY JOINT

***DESCRIPTION**: When the user selects CONTROLLER MAPPING (with their mouse) – while in JOINT BY JOINT MODE – an image of JOINT BY JOINT MODE controller mapping is displayed. That controller mapping image ALSO includes instructions on HOW to engage ALL UI FUNCTIONS UNRELATED TO THE XBOX CONTROLLER. Once the user is finished viewing that controller mapping image, the user can deselect (or toggle OFF) CONTROLLER MAPPING (with their mouse).*

DEVELOPERS:

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are unrelated to the Xbox controller are operated by the user through their mouse.

***DESCRIPTION**: Upon deactivating the JOINT BY JOINT controller map (with their mouse), the user begins operating and practicing with the robot arm (with their Xbox controller).*

***DEVELOPERS**:*

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are unrelated to the Xbox controller are operated by the user through their mouse.

***DESCRIPTION**: Once the user is finished with FREE PLAY, the user selects EXIT (with their mouse) to return to the splash screen.*

***DEVELOPERS**:*

ALL robot arm functions are operated by the user through their Xbox controller.

ALL UI functions which are unrelated to the Xbox controller are operated by the user through their mouse.

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MANIPULATOR SIM

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Welcome, Eric! Make a selection to get started.

RULES **FREE PLAY** **GAME MODE**

***DESCRIPTION**: Once the user returns to the splash screen, the user can – once again – select from RULES, FREE PLAY, GAME MODE, or LOG OUT (all with their mouse).*

***DEVELOPERS**:*

Please use this storyboard document – which has EVOLVED from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.

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MANIPULATOR SIM

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Welcome, Eric! Make a selection to get started.

RULES | FREE PLAY | GAME MODE

***DESCRIPTION**: The user selects GAME MODE (with their mouse).*

***DEVELOPERS**:*

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GAME MODE

Functionality

***DESCRIPTION**: After gaining access to GAME MODE, the user will see (1) the "nine block", (2) robot arm (in a default "stowed" position), (3) TechnipFMC logo, (4) GEMINI logo, (5) blue balloon, (6) red balloon, (7) LEVEL, (8) "game clock" (in a rest state), (9) HIGH SCORE, (10) FIRST-PERSON (ON by default), (11) JOINT BY JOINT, (12) HYDRAULICS (ON by default), (13) CONTROLLER LOCKED (OFF by default), and (14) EXIT.*

***DEVELOPERS**:*

All buttons use a custom true type font called Clan or ClanOT with a (1) Narrow Bold and (2) News style. All "game clock" displays use a font called DS DIGITAL. Both fonts will be provided to you).

Related Photoshop source PSD files will be provided, as well.

The nine block is required to have full collision volumes (NOT to track impact data but to ensure there are NO INTERSECTING 3D MODELS. No exceptions).

***DESCRIPTION**: The user selects LEVEL (with their mouse). The application displays the easiest level by default and alters the game clock to show the appropriate count UP or count DOWN time. The user can select the "up-and-down arrows" symbol (with their mouse) to toggle the available levels.*
***PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

***DEVELOPERS**:*

The "up" and "down" arrows on the perimeter of the "game clock" are designed to indicate to the user whether a clock should be expected to count UP (for an individual balloon placement) or count DOWN (for maximum balloon placements).

***DESCRIPTION**: The user toggles to EASY - MAX BALLOONS (with their mouse) which utilizes a count DOWN time limit to track how many balloons a user can successfully place within the corresponding-colored boxes of the nine block within 10 minutes. **PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

***DEVELOPERS**:*

The "game clock" font (DS DIGITAL) is finicky, and the kerning will require some careful adjustment to ensure the digits – particularly the "1" – will not horizontally shift around.

***DESCRIPTION**: The user toggles to MEDIUM - ONE BALLOON (with their mouse) which utilizes a count UP time limit to track how fast the user can place ONE balloon within the corresponding-colored box within the nine block. **PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

DEVELOPERS:

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***DESCRIPTION**: The user toggles to MEDIUM - MAX BALLOONS (with their mouse) which utilizes a count DOWN time limit to track how many balloons a user can successfully place within the corresponding-colored boxes of the nine block within 6 minutes. **PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

DEVELOPERS:

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***DESCRIPTION**: The user toggles to HARD - ONE BALLOON (with their mouse) which utilizes a count UP time limit to track how fast the user can place ONE balloon within the corresponding-colored box within the nine block. **PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

DEVELOPERS:

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***DESCRIPTION**: The user toggles to HARD - MAX BALLOONS (with their mouse) which utilizes a count DOWN time limit to track how many balloons a user can successfully place within the corresponding-colored boxes of the nine block within 4 minutes. **PLEASE NOTE**: Corresponding-colored boxes are RANDOMLY IDENTIFIED by the application, which visually prompts the user to select the appropriately-colored balloon (with their Xbox controller).*

DEVELOPERS:

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***DESCRIPTION**: The user chooses HARD - MAX BALLOONS (with their mouse) by clicking SELECT just beneath it.*

***DEVELOPERS**:*

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***DESCRIPTION**: By clicking SELECT (with their mouse) for the HARD – MAX BALLOONS level, the user triggers the application to simultaneously hide the LEVEL SELECTION MENU and display the (1) right-side HARD – MAX BALLOONS "identifier" (reminding the user of the level they are about to engage), (2) a START button to select when the user is READY, and (3) a left-side MAX BALLOONS COUNTER (that is displayed as DISABLED by default until the user selects the START button).*

DEVELOPERS:

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***DESCRIPTION**: The user selects START (with their mouse), which simultaneously (1) DISABLES that START button as a visual cue for the user to prepare to begin, (2) ACTIVATES the MAX BALLOONS COUNTER (which is yet another visual cue for the user), (3) DISABLES the HIGH SCORE button (which cannot be accessed while the user is playing ANY level), and (4) the application is about to begin a "3, 2, 1" countdown before randomly highlighting one of the boxes within the nine block.*

DEVELOPERS:

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***DESCRIPTION**: And "JUST" as the application is about to (1) begin the "3, 2, 1" countdown followed by (2) randomly highlighting a box within the nine block, (3) thus triggering the user to manipulate the robot arm towards a corresponding balloon, the user suddenly believes the HARD – MAX BALLOONS level will be too overwhelming and decides to change levels by selecting LEVEL (with their mouse). This action triggers a CHANGE LEVEL/RESUME LEVEL overlay to appear.*

DEVELOPERS:

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***DESCRIPTION**: The user selects CHANGE LEVEL (with their mouse).*

***DEVELOPERS**:*

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***DESCRIPTION**: After the user selects CHANGE LEVEL (with their mouse), the application simultaneously displays (1) a ONE MOMENT PLEASE alert while (2) the HARD – MAX BALLOONS level is deactivated to allow the user to begin choosing from the other levels.*

DEVELOPERS:

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***DESCRIPTION**: When a user chooses to change from one level to another, the level selector – by default – will always display the last known or last chosen level. In this case, that last known level is HARD – MAX BALLOONS.*

***DEVELOPERS**:*

Please use this storyboard document – which has EVOLVED from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.

***DESCRIPTION**: The user toggles the up-and-down arrows (with their mouse) to change the level selector display from HARD – MAX BALLOONS to EASY - ONE BALLOON.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user clicks SELECT for the EASY – ONE BALLOON level.*

***DEVELOPERS**:*

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***DESCRIPTION**: By clicking SELECT (with their mouse) for the EASY – ONE BALLOON level, the user triggers the application to simultaneously hide the LEVEL SELECTION MENU and display the (1) right-side EASY – ONE BALLOON "identifier" (reminding the user of the level they are about to engage) and (2) a START button to select when the user is READY.*

DEVELOPERS:

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***DESCRIPTION**: The user selects START (with their mouse), which simultaneously (1) DISABLES that START button as a visual cue for the user to prepare to begin and (2) DISABLES the HIGH SCORE button (which cannot be accessed while the user is playing ANY level). The application is about to begin a "3, 2, 1" countdown before randomly highlighting one of the boxes within the nine block.*

DEVELOPERS:

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***DESCRIPTION**: The application immediately hides the LEVEL selector and begins an animated count down (as if the user is waiting for the green light at a drag race).*

***DEVELOPERS**:*

The countdown font for "3, 2, 1, GO" is called Impact. That font will be provided to you.

***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: The application continues the animated count down.*

***DEVELOPERS**:*

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***DESCRIPTION**: As the application (1) concludes the animated count down with the word GO and (2) randomly highlights one box within the nine block, (3) the user is ready to operate the robot arm (with their Xbox controller) in the direction of the corresponding-colored balloon.*

***DEVELOPERS**:*

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FLIGHT RISK

Functionality

***DESCRIPTION**: The randomly-highlighted blue box gives the user an immediate visual cue to begin manipulating the robot arm into position (with their Xbox controller) to capture a blue balloon and successfully position it into the corresponding box before the balloon inflates too large. If a balloon becomes too big for placement, it becomes a "flight risk" to float away, up and out of the scene.*

***Please NOTE**: There WILL be enough **CONTRAST** between the balloon and box highlight in the POC.*

DEVELOPERS:

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***DESCRIPTION**: The user manipulates the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*

***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*

***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

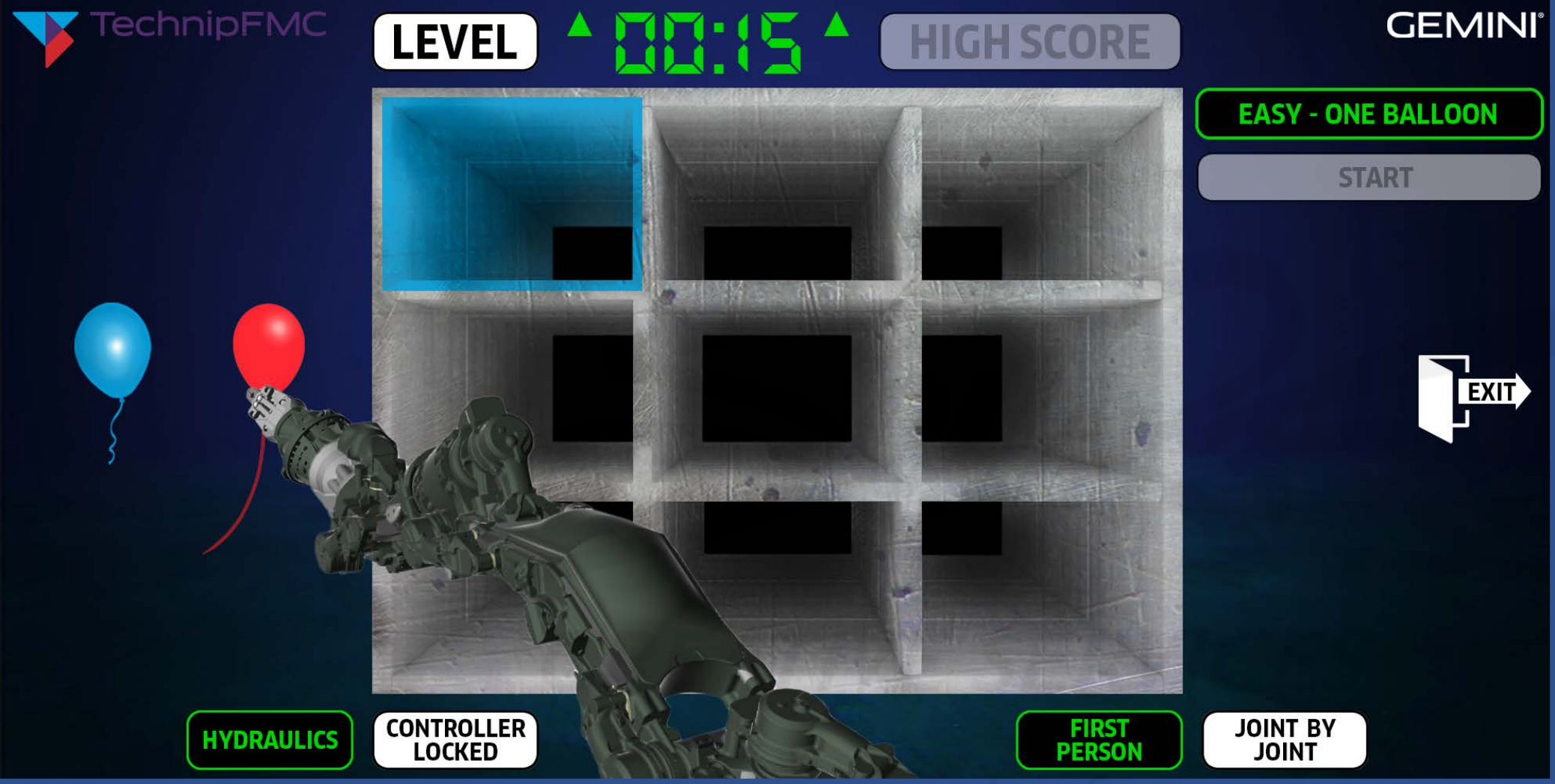
***DEVELOPERS**:*

Please use this storyboard document – which has EVOLVED from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.

***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*



***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*

***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

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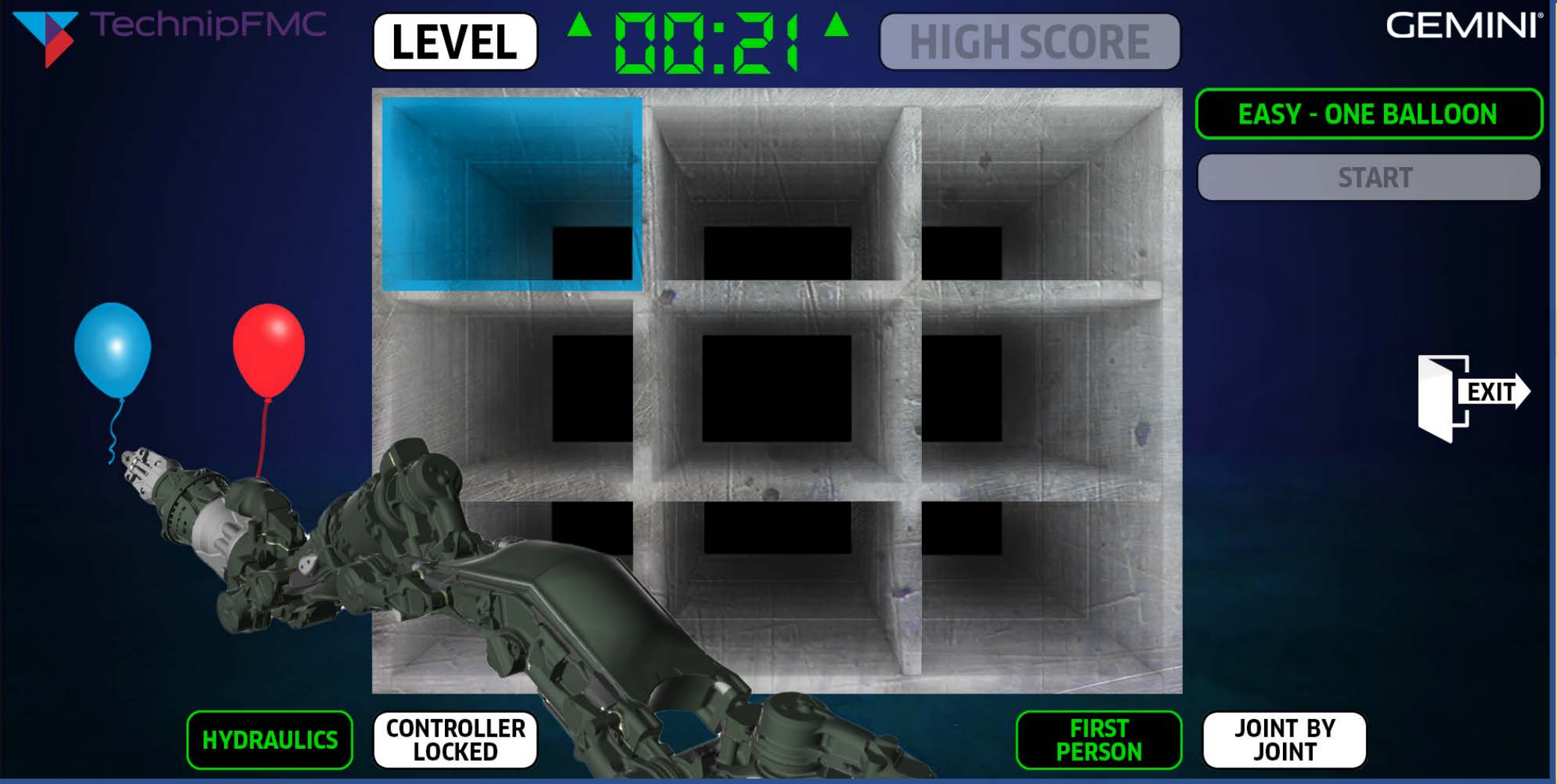
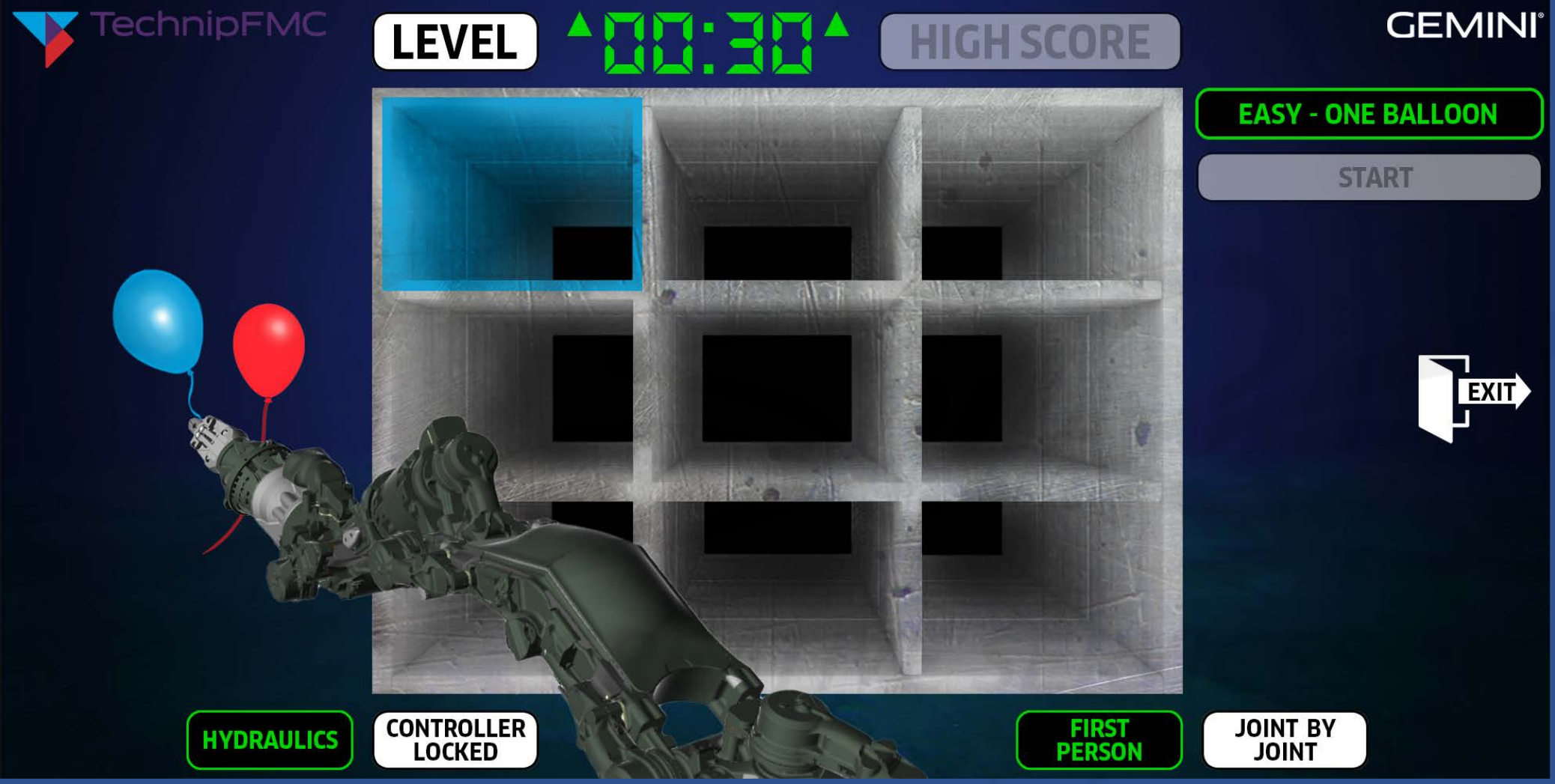


***DESCRIPTION**: The user continues to manipulate the robot arm (with their Xbox controller) over to the blue balloon.*

***DEVELOPERS**:*

Please use this storyboard document – which has EVOLVED from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.



***DESCRIPTION**: The user has manipulated the robot arm (with their Xbox controller) to successfully capture the blue balloon.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user now manipulates the robot arm (with their Xbox controller) and transports the blue balloon up towards the highlighted box. The user must keep an eye on the size of the balloon. The longer the user takes, the more the balloon expands, and the sooner it becomes too large to successfully position.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user continues manipulating the robot arm (with their Xbox controller) towards successful positioning of the blue balloon within the highlighted box.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user continues manipulating the robot arm (with their Xbox controller) towards successful positioning of the blue balloon within the highlighted box.*

***DEVELOPERS**:*

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***DESCRIPTION**: The user continues manipulating the robot arm (with their Xbox controller) towards successful positioning of the blue balloon within the highlighted box.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*

***DESCRIPTION**: The user continues manipulating the robot arm (with their Xbox controller) towards successful positioning of the blue balloon within the highlighted box.*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*

***DESCRIPTION**: The user successfully manipulates the robot arm (with their Xbox controller) to place the blue balloon within the highlighted box JUST in time. Please NOTE: There is NO VACCUM as part of the process by which the user places a balloon within the highlighted box. A given balloon will inflate to full size at 300 seconds during EASY, 240 seconds during MEDIUM, and 120 seconds at HARD. These subjective times can be adjusted if – during ALPHA UAT – they prove too easy or hard.*

DEVELOPERS:

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***DESCRIPTION**: The application responds with a SUCCESS panel offering three options: REPLAY THIS LEVEL, PLAY ANOTHER LEVEL, and EXIT. No matter which option the user selects (with their mouse), the user interface AND robot arm will reset to their default states. Whether the user selects REPLAY THIS LEVEL or PLAY ANOTHER LEVEL, the (A) SUCCESS panel, (B) EASY – ONE BALLOON level identifier, and (C) START button will simultaneously disappear, and HIGH SCORE will be reenabled.*

DEVELOPERS:

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***DESCRIPTION**: If the user selects REPLAY THIS LEVEL (with their mouse) as depicted above, the (A) SUCCESS panel, (B) EASY – ONE BALLOON level identifier, and (C) START button will simultaneously disappear, and HIGH SCORE will be reenabled.*

***DEVELOPERS**:*

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***DESCRIPTION**: If the user selects PLAY ANOTHER LEVEL (with their mouse) as depicted above, the (A) SUCCESS panel, (B) EASY – ONE BALLOON level identifier, and (C) START button will simultaneously disappear, and HIGH SCORE will be reenabled.*

***DEVELOPERS**:*

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***DESCRIPTION**: If the user selects EXIT (with their mouse) as depicted above, the application will return to the splash screen (where the user would, once again, see the options of RULES, FREE PLAY, GAME MODE, or LOG OUT). The user can choose to re-engage RULES, FREE PLAY, and GAME MODE or decide to LOG OUT (which – again – helps the POC application to track the difference between logging out and an internet outage, web browser crash, or operating system failure).*

DEVELOPERS:

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***DESCRIPTION**: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.*

DEVELOPERS:

The amount of time it will take the balloons – in general – to INFLATE from small to large will be understandably subjective until the client has been granted access to our first ALPHA build.

BALLOON INFLATION is currently tied to 300 seconds for EASY, 240 seconds for MEDIUM, and 120 seconds for HARD (per the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx").

***DESCRIPTION**: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.*

***DEVELOPERS**:*

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***DESCRIPTION*: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.**

***DEVELOPERS*:**

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***DESCRIPTION*: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.**

***DEVELOPERS*:**

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***DESCRIPTION*: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.**

***DEVELOPERS*:**

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***DESCRIPTION*: "And, AND" IF the user fails to succeed with the balloon placement before the balloon becomes too big . . . that balloon steadily floats up, up, and away.**

***DEVELOPERS*:**

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***DESCRIPTION**: And once a balloon DOES escape the grasp of the user, the level remains ACTIVE. The clock WILL continue to count UP. A new blue balloon will simultaneously appear to take the place of the old one. And yet, the user cannot assume they will be grabbing another blue balloon (with their Xbox controller). The application will randomly choose the next balloon and highlighted box combination, and the user MUST be ready.*

DEVELOPERS:

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HIGH SCORE

Functionality

***DESCRIPTION**: The user can-and-does select HIGH SCORE (with their mouse).*

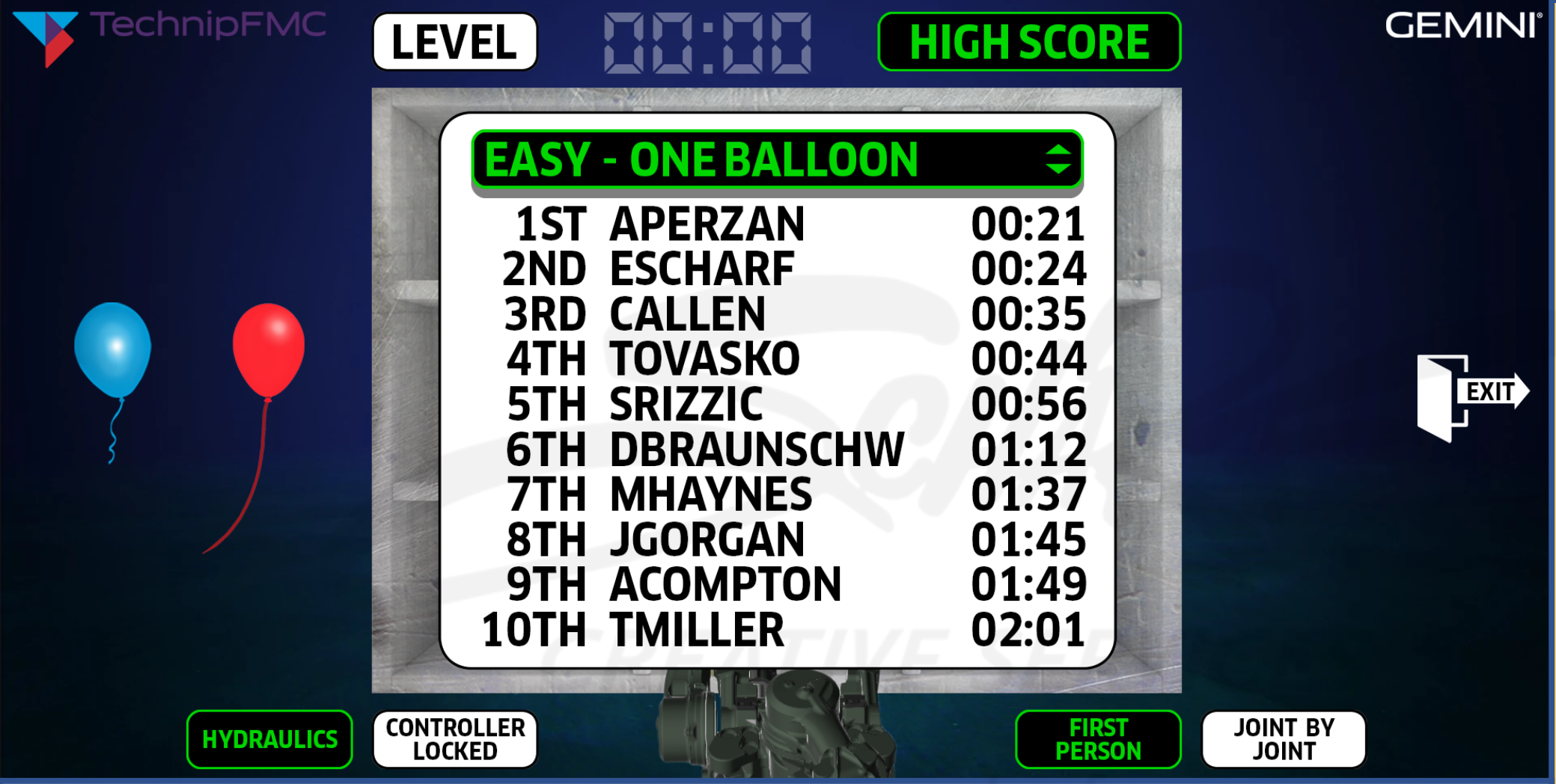
***DEVELOPERS**:*

All listed data within the HIGH SCORE panel is FAKE/TEMPORARY. Do not bother to analyze or interpret that data.

***DESCRIPTION**: Upon HIGH SCORE being selected, a TOP-10 list of HIGH SCORES (prioritized towards the user's chosen EASY: ONE BALLOON level) is displayed. If the user is the FIRST-EVER player of the simulation, ONLY their results will display. The user can toggle per-level high scores via the "up-and-down arrows" symbol (with their mouse). No matter how many concurrent users at the time, a "ONE MOMENT PLEASE" alert will always appear (while the system populates those scores).*

DEVELOPERS:

All listed data within the HIGH SCORE panel is FAKE/TEMPORARY. Do not bother to analyze or interpret that data.



***DESCRIPTION**: If multiple users have played the simulation, multiple high scores will be displayed. While the splash screen displays a user's FULL NAME (pulled and matched from the XRTMS database), their IN-GAME/POC username SHOULD be limited/truncated to a 10-character max (e.g. APERZAN, ESCHARF). A number will be added to the end of a given user's POC username (e.g. ESCHARF1, ESCHARF2, ESCHARF3, etc.) in the scenario of multiple users with the same name.*

DEVELOPERS:

Each 10-character-limited POC username is based upon a "first initial, last name" naming convention, harvested from how a user's full name has been entered within the XRTMS database.

XRTMS Name:
Eric Scharf
POC Name:
ESCHARF

For multiple users of the same name, a number will be added (within that 10-character limitation):

ESCHARF1, ESCHARF2, ESCHARF3, etc.

***DESCRIPTION**: When the user toggles the per-level high scores (with their mouse) via the "up-and-down arrows" symbol, a "ONE MOMENT PLEASE" alert will always appear (while the system populates those scores) no matter how many concurrent users at the time.*

DEVELOPERS:

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***DESCRIPTION**: After toggling (with their mouse) from EASY: ONE BALLOON to EASY: MAX BALLOONS, the user sees the high scores for maximum number of balloons successfully placed in color-corresponding boxes within the nine block within a 10-minute period.*

DEVELOPERS:

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***DESCRIPTION**: The user sees the high scores for maximum number of balloons successfully placed in color-corresponding boxes within the nine block within a 6-minute period.*

DEVELOPERS:

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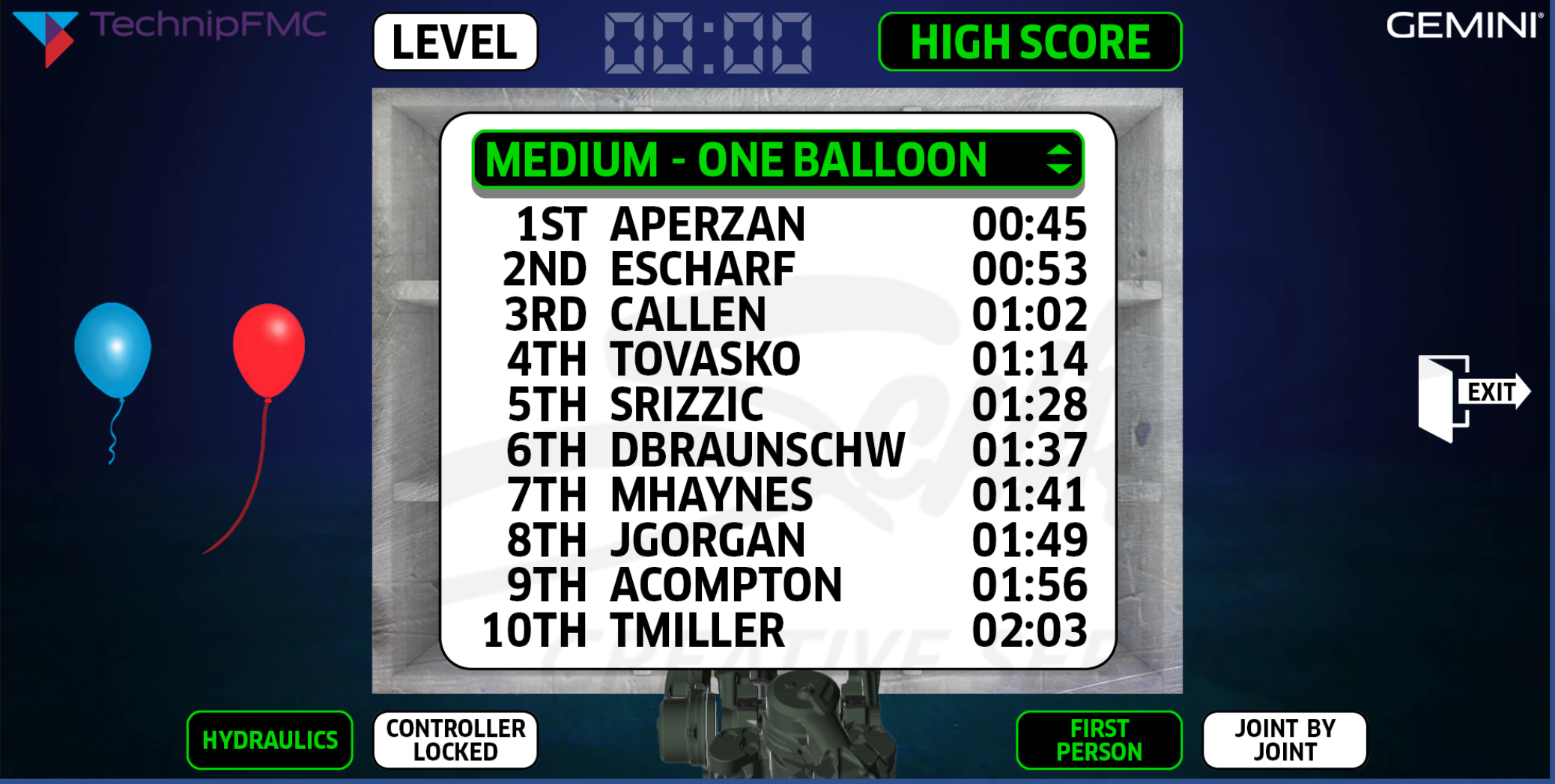

***DESCRIPTION**: After toggling (with their mouse) from EASY: MAX BALLOONS to MEDIUM: ONE BALLOON, the user sees which users achieved the lowest times for successfully placing ONE balloon within a corresponding-colored box within the nine block.*

***DEVELOPERS**:*

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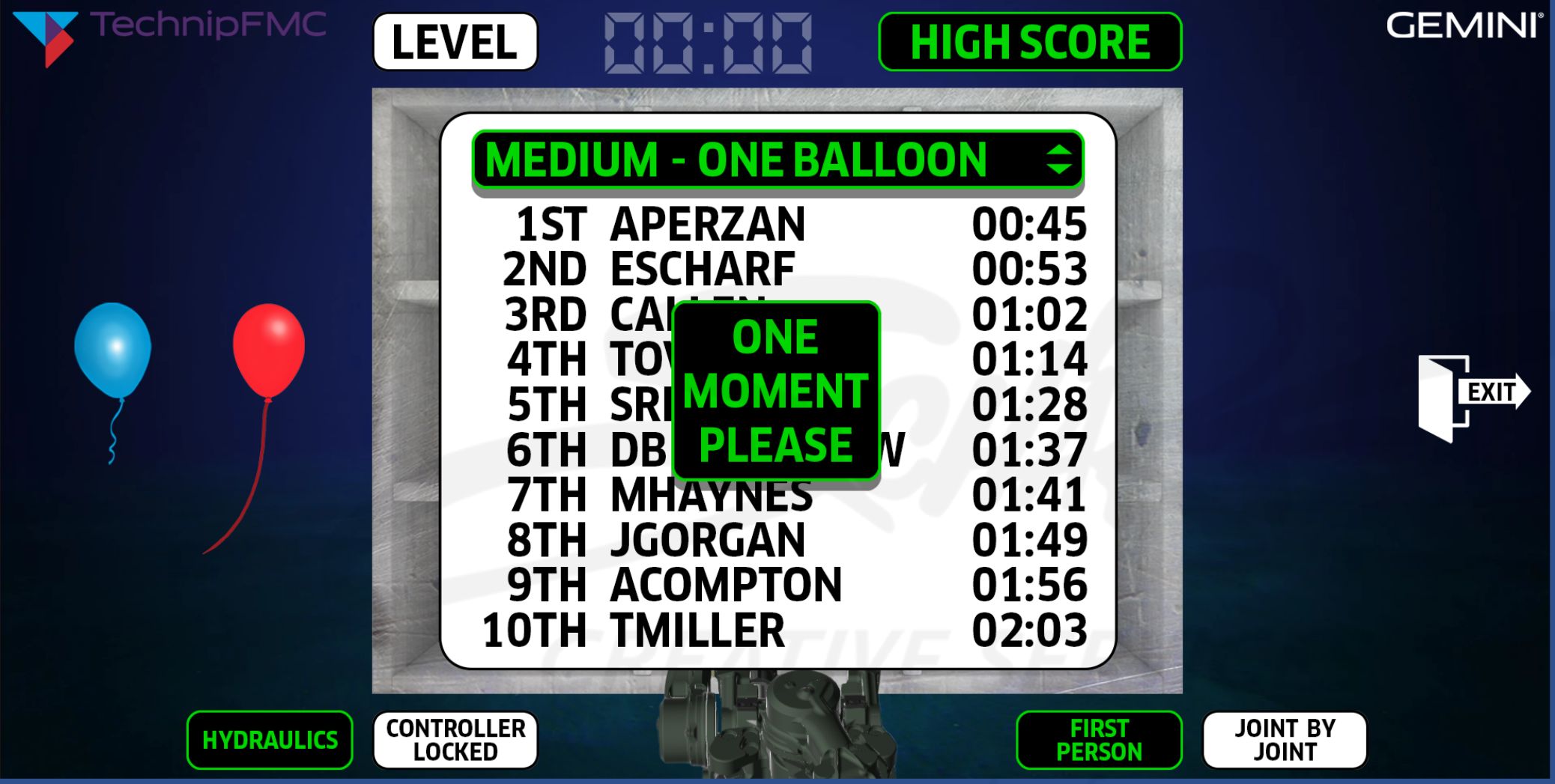

***DESCRIPTION**: The user has toggled (with their mouse) from MEDIUM: ONE BALLOON to the next level. "ONE MOMENT PLEASE."*

DEVELOPERS:

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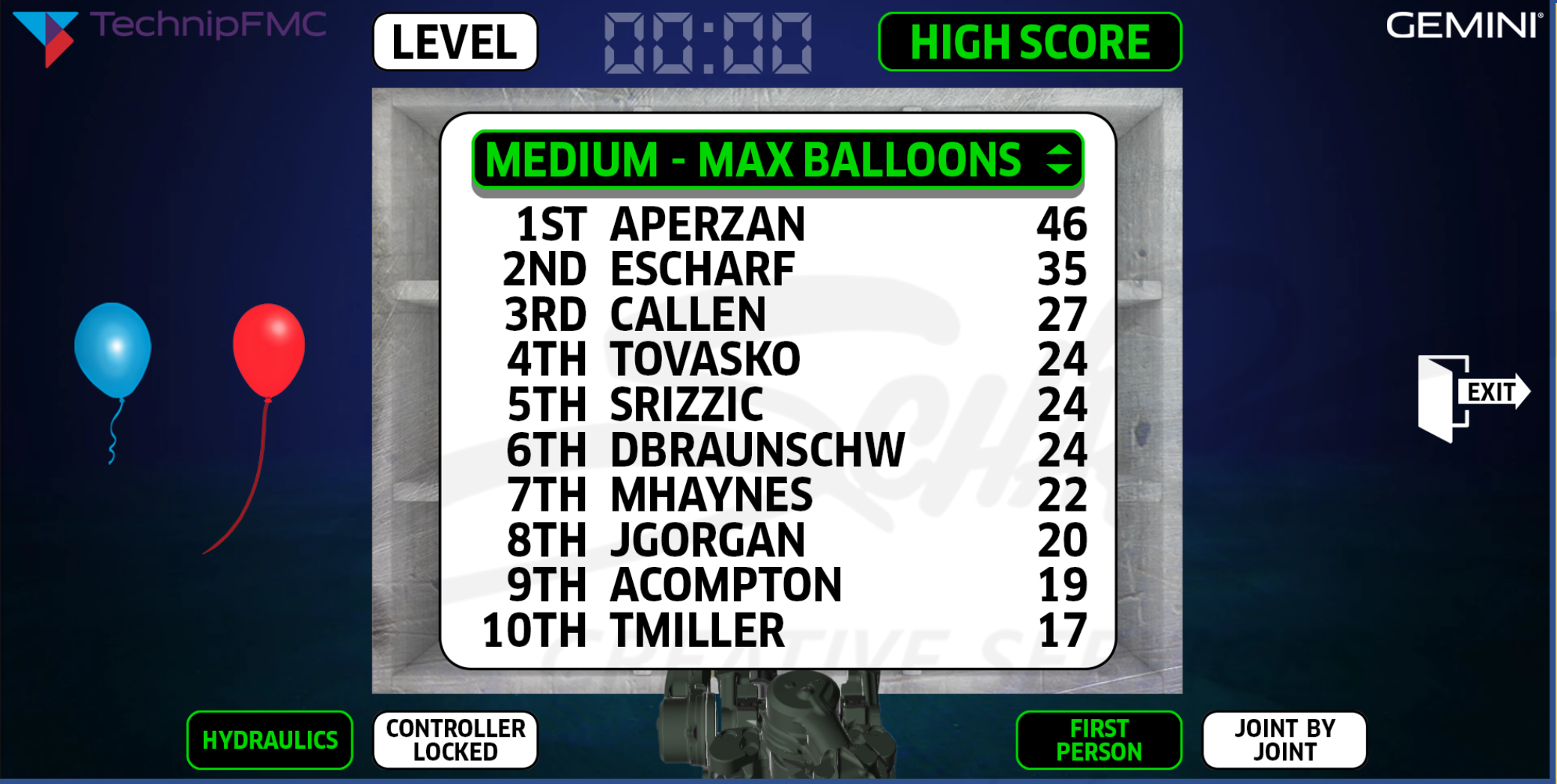

***DESCRIPTION**: After toggling (with their mouse) from MEDIUM: ONE BALLOON to MEDIUM: MAX BALLOONS, the user sees the high scores for maximum number of balloons successfully placed in color-corresponding boxes within the nine block within a 6-minute period.*

***DEVELOPERS**:*

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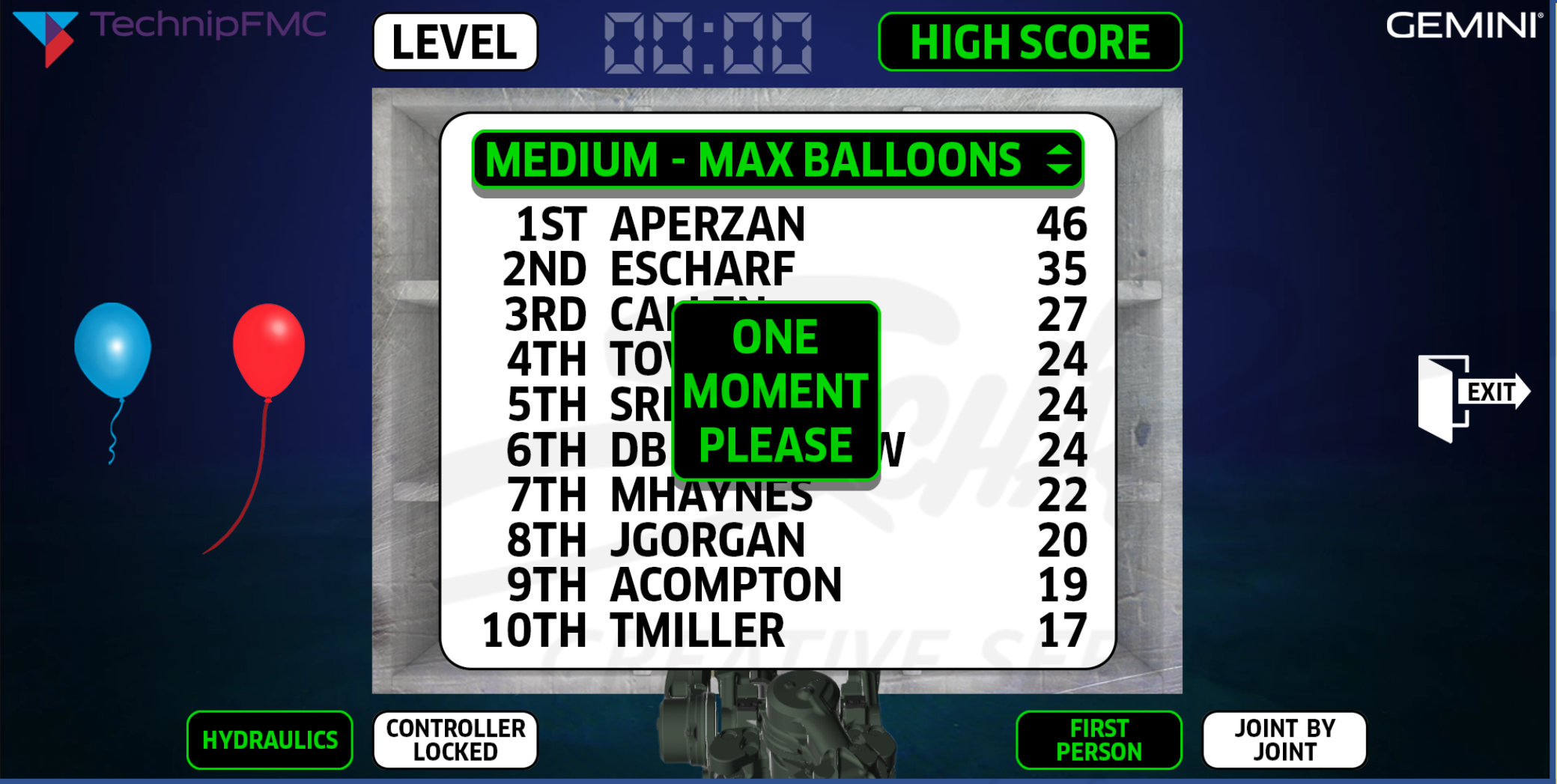
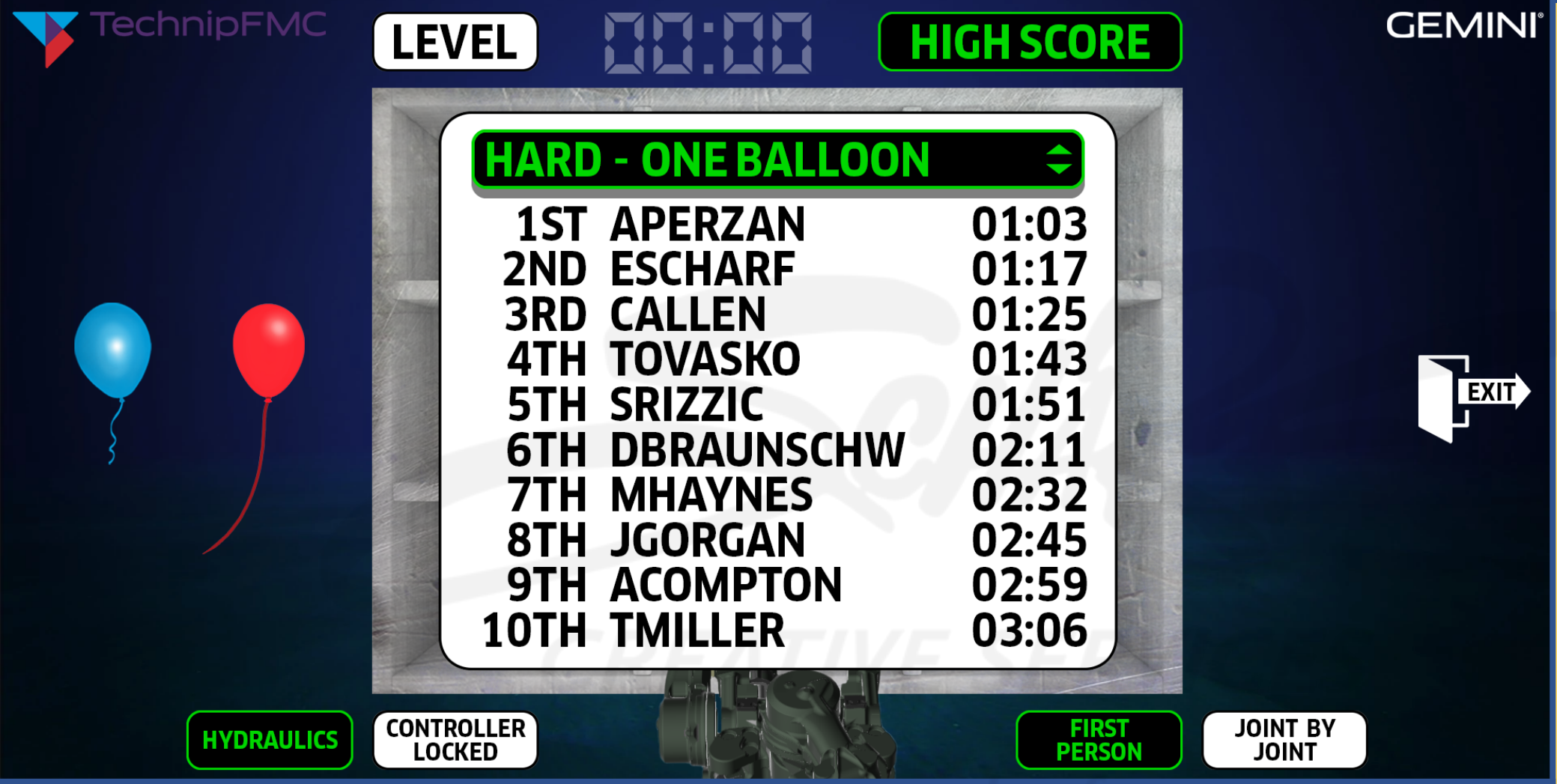


***DESCRIPTION**: The user has toggled (with their mouse) from MEDIUM: MAX BALLOONS to the next level. "ONE MOMENT PLEASE."*

***DEVELOPERS**:*

*Please use this storyboard document – which has **EVOLVED** from the "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx" – to carefully bring any CRITICAL discrepancies to my attention with as much detail as reasonably possible.*



***DESCRIPTION**: After toggling (with their mouse) from MEDIUM: MAX BALLOONS to HARD: ONE BALLOON, the user sees the high scores for the lowest times for successfully placing ONE balloon within a corresponding-colored box within the nine block.*

***DEVELOPERS**:*

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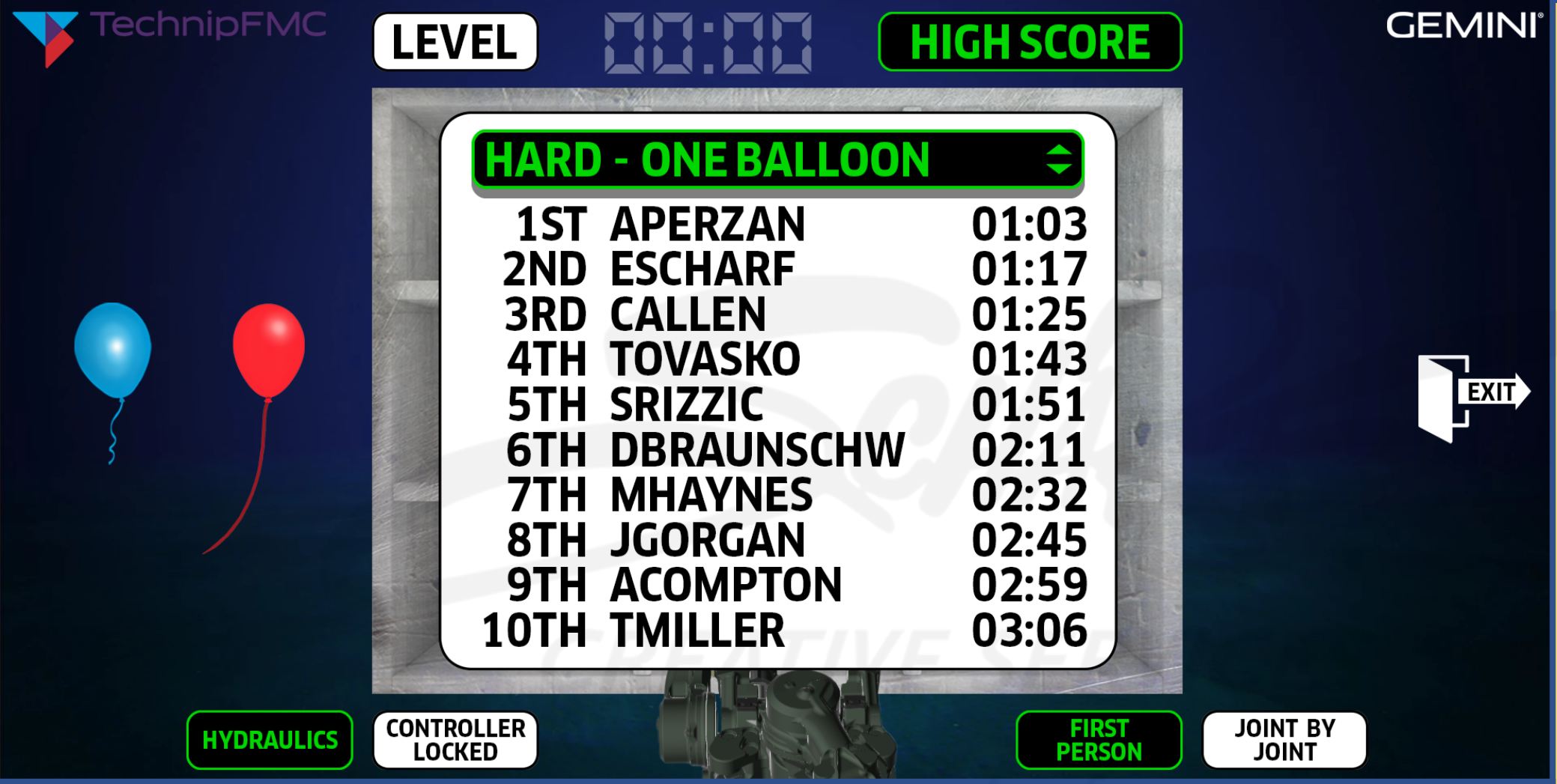

***DESCRIPTION**: After toggling (with their mouse) from MEDIUM: MAX BALLOONS to HARD: ONE BALLOON, the user sees which users achieved the lowest times for successfully placing ONE balloon within a corresponding-colored box within the nine block.*

***DEVELOPERS**:*

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***DESCRIPTION**: After toggling (with their mouse) from HARD: ONE BALLOON to HARD: MAX BALLOONS, the user sees the high scores for maximum number of balloons successfully placed in color-corresponding boxes within the nine block within a 4-minute time period.*

DEVELOPERS:

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***DESCRIPTION**: Once the user is finished reviewing the high scores, the user can simply select HIGH SCORE (with their mouse) to deactivate the HIGH SCORE panel. At this point, the user can select LEVEL (with their mouse) to re-engage another timing challenge . . . or the user can choose to return to the application splash screen by selecting EXIT (with their mouse).*

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***DESCRIPTION**: The user selects EXIT (with their mouse).*

***DEVELOPERS**:*

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MANIPULATOR SIM

This simulation is designed to competitively challenge and track the dexterity of individual users while they operate a manipulator to successfully position balloons into boxes under specific time constraints. A *unique access code* is required for each user.

Welcome, Eric! Make a selection to get started.

RULES **FREE PLAY** **GAME MODE**

***DESCRIPTION**: The user has been returned to the application splash screen where the user can (with their mouse) select RULES, FREE PLAY, GAME MODE, or LOG OUT.*

***DEVELOPERS**:*

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Welcome, Eric! Make a selection to get started.

RULES | FREE PLAY | GAME MODE

***DESCRIPTION**: The user (with their mouse) selects LOG OUT. The LOG OUT button changes color (from black to red) to indicate system recognition of the user's desire to exit the application.*

***DEVELOPERS**:*

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SESSION

Time Out

***DESCRIPTION**: If the user must suddenly step away from their session – SPECIFIC to GAME MODE (where user data is being tracked) – and the user is unable to log out, the above SESSION ALERT will appear (AFTER 60 seconds of inactivity) and the game clock will freeze on its current time. The user will then have five minutes to return and select CONTINUE (with their mouse) or risk being (1) exited from GAME MODE and their application (2) session being logged out.*

DEVELOPERS:

The SESSION ALERT only appears within GAME MODE.

The SESSION TIME OUT panel will only appear after 60 seconds of inactivity.

The SESSION TIME OUT counter will only appear within the statement "You will be logged out in 5:00."

That counter will count down from 5:00 to 0:00 unless the user (1) returns to action and (2) selects CONTINUE to halt the countdown and dismiss the SESSION ALERT.

***DESCRIPTION**: If-and-when the user selects CONTINUE (with their mouse) before the five-minute timer runs down to 0:00, the SESSION ALERT panel will simultaneously disappear, the game clock will unfreeze from its current time, and the user will continue their current session.*

***DEVELOPERS**:*

The SESSION ALERT only appears within GAME MODE.

The SESSION TIME OUT counter will only appear within the statement "You will be logged out in 5:00."

That counter will count down from 5:00 to 0:00 unless the user (1) returns to action and (2) selects CONTINUE to halt the countdown and dismiss the SESSION ALERT.

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MANIPULATOR SIM

This simulation is designed to competitively challenge and track the dexterity of individual users while they operate a manipulator to successfully position balloons into boxes under specific time constraints. A *unique access code* is required for each user.

Please Input Your Access Code: [ ] ENTER

Your last session timed out due to lack of user activity.
Please input your access code to begin another session.

***DESCRIPTION**: If the user fails to select CONTINUE (with their mouse) before the five-minute timer runs down to 0:00, the user's session will time out, resulting in the user being logged out and redirected back to the application splash screen (where an alert message will explain what occurred). This data-tracking POC application deserves to know whether a user is actively engaged in their timed GAME MODE activities or distracted from them (no matter the reason).*

DEVELOPERS:

The SESSION ALERT only appears within GAME MODE.

The SESSION TIME OUT counter will only appear within the statement "You will be logged out in 5:00."

That counter will count down from 5:00 to 0:00 unless the user (1) returns to action and (2) selects CONTINUE to halt the countdown and dismiss the SESSION ALERT.

***REMEMBER**: The LOG OUT icon only appears on the SPLASH SCREEN if the user is logged in.*

ROBOT ARM

Functionality

***DESCRIPTION**: The above screenshot from within the initial application space demonstrates the robot arm in an approximate "stowed" position in front of the nine block. As stated above, the above screenshot exists ONLY to demonstrate and confirm proper robot arm positioning and distance from the nine block. The above screenshot is NOT representative of the final look and feel of the robot arm, nine block, or the surrounding POC environment.*

DEVELOPERS:

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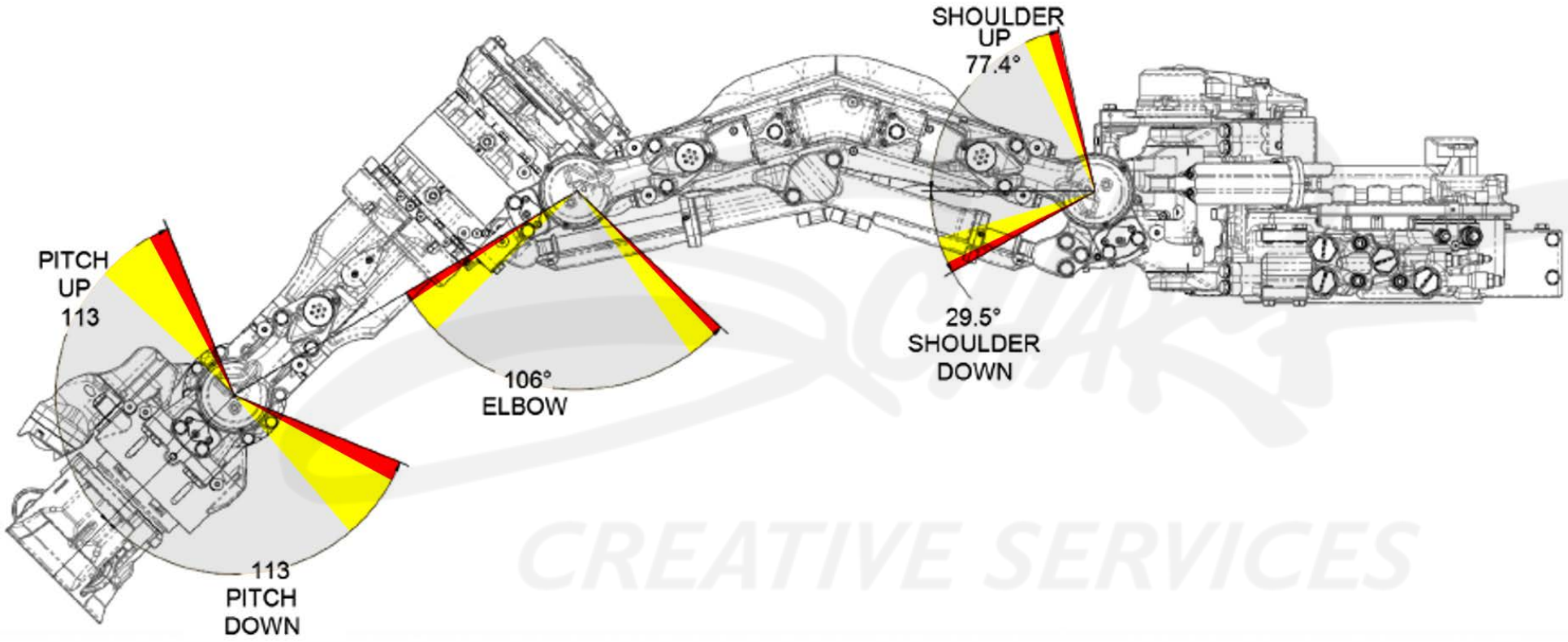
***PLEASE NOTE**: It cannot be restated enough that there can be NO intersecting meshes/3D models. NO EXCEPTIONS.*

THESE VISUAL REPRESENTATIONS OF THE 90%/7.5%/2.5% FORMULA ARE *APPROXIMATIONS*.



***DESCRIPTION**: Though not detailed within "2022-04-26 - TechnipFMC ROV POC Pre-Storyboard Verifications List.xlsx," Mosaic gained alignment with the client on how best and simplest to convey the robot arm stress RANGES, using a 90%/7.5%/2.5% (Normal/Stress Yellow/Stress Red) formula. As the SIDE profile diagram above displays, each of the maximum rotations (113° for the wrist, 106° for the elbow, 106.9° for the shoulder) is divided up into 90%/7.5%/2.5% ranges.*

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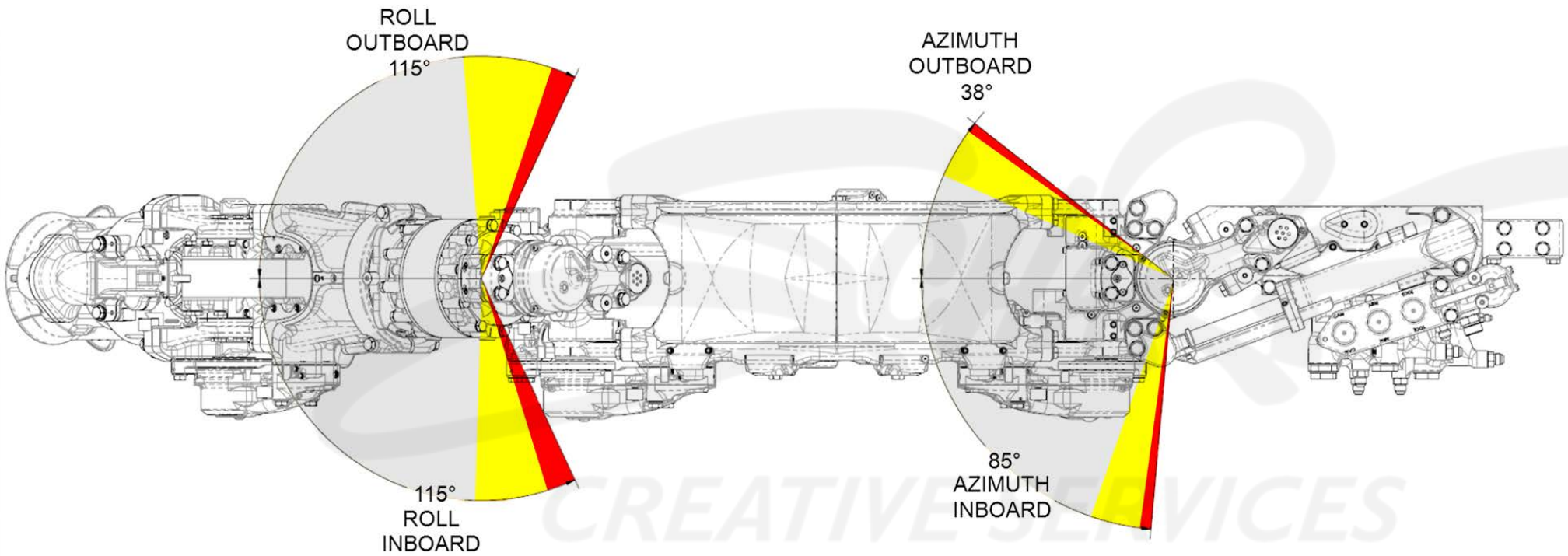

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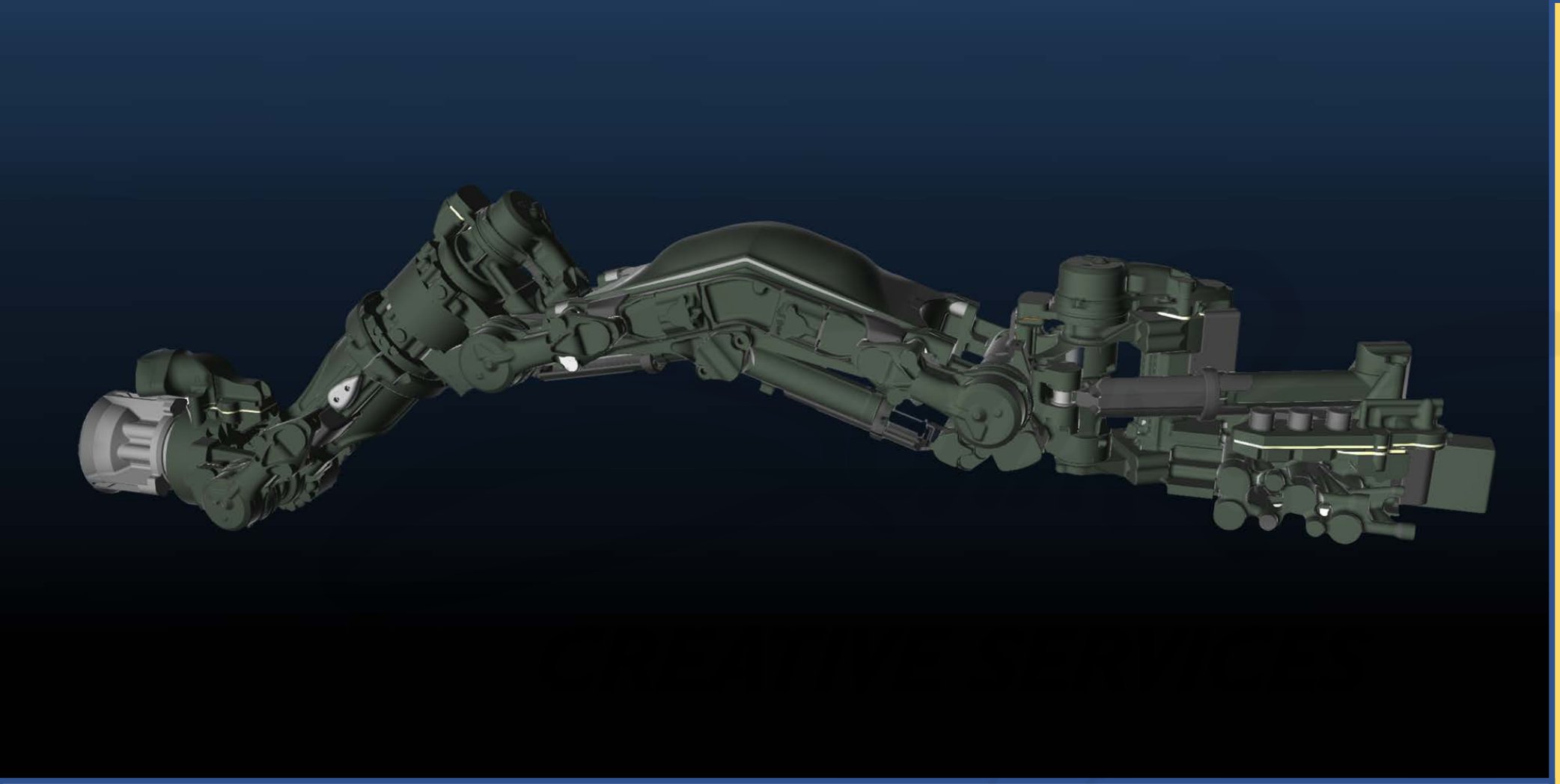

***DESCRIPTION**: The moment one or more of the robot arm components are stressed TOWARDS their maximum extents, they highlight YELLOW. Once those components are reversed into safer ranges, the highlights deactivate. If those yellow components, however, are stressed FURTHER or TO their maximum extents, they highlight RED (and they remain red until the user reverses those components into safer ranges). The "ranges" are detailed on slides 110 and 111.*

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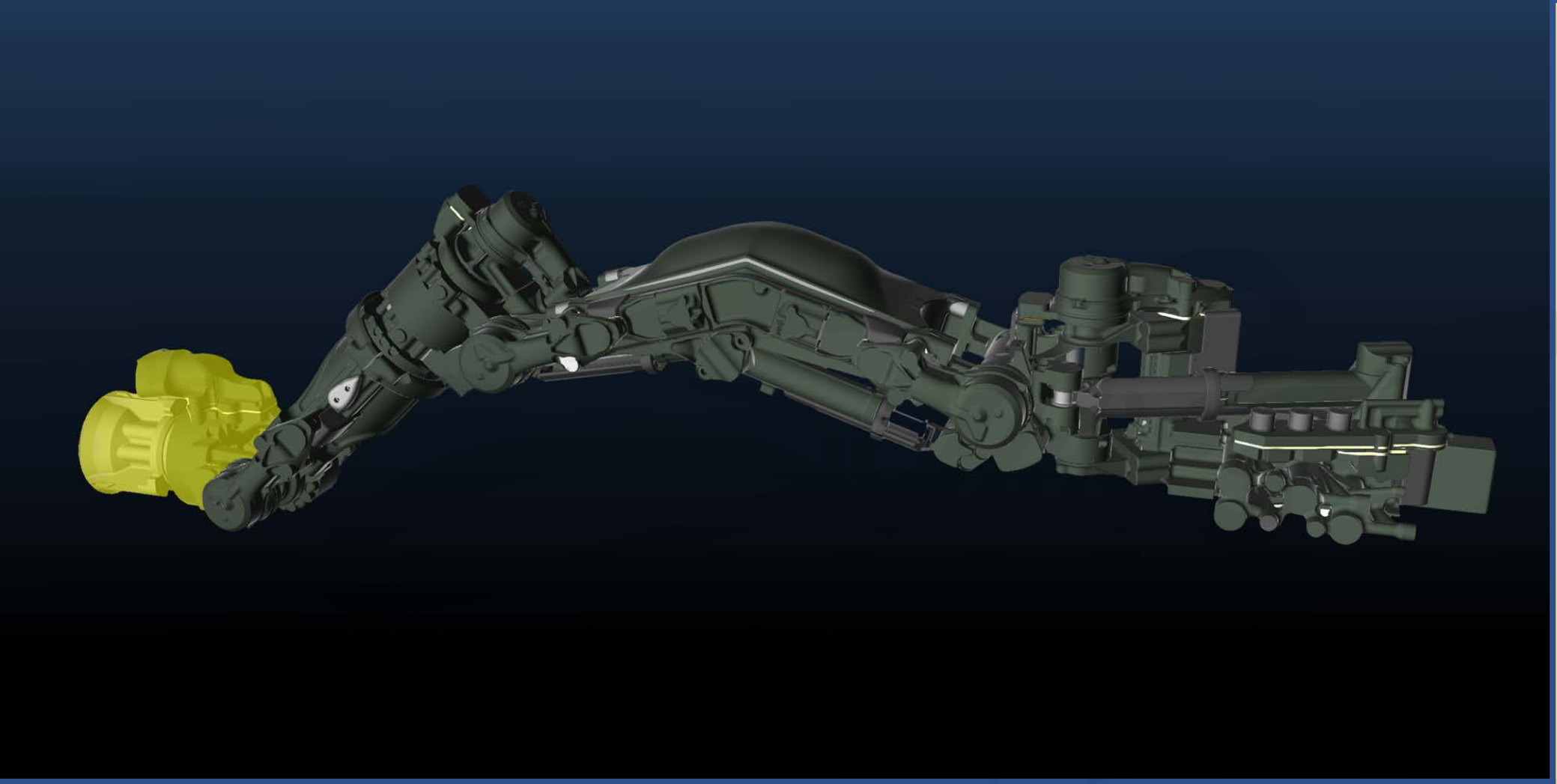

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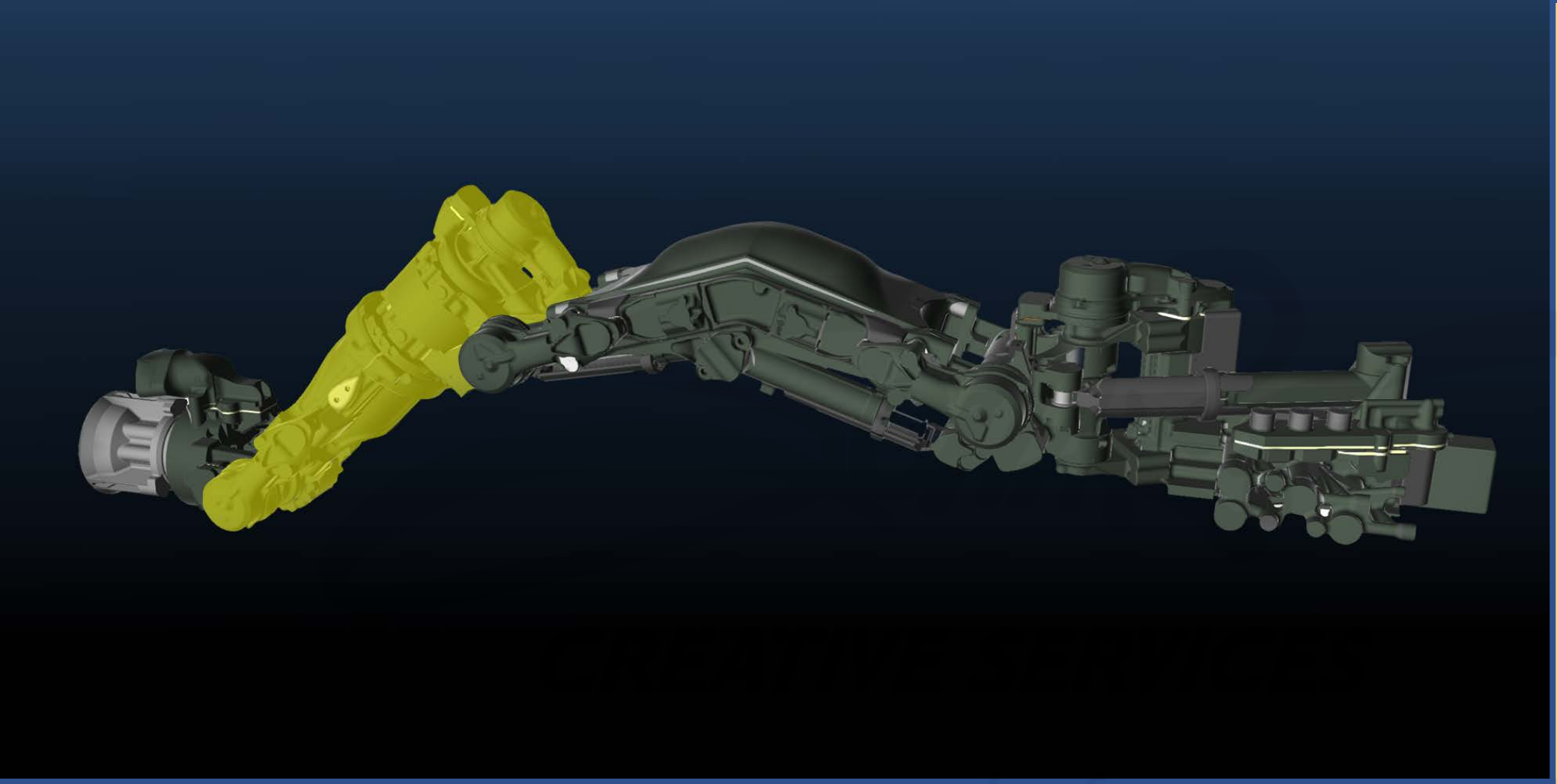

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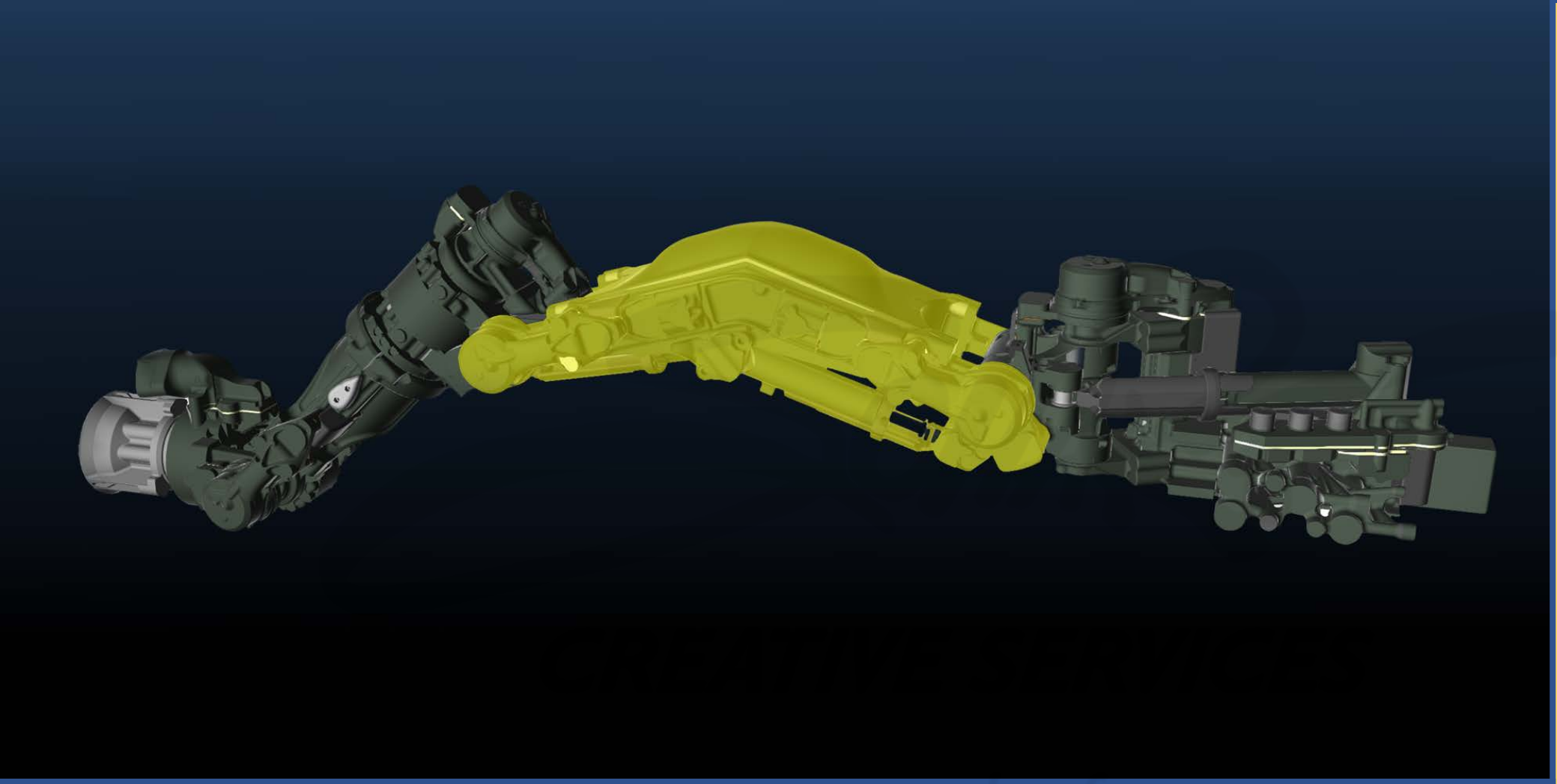

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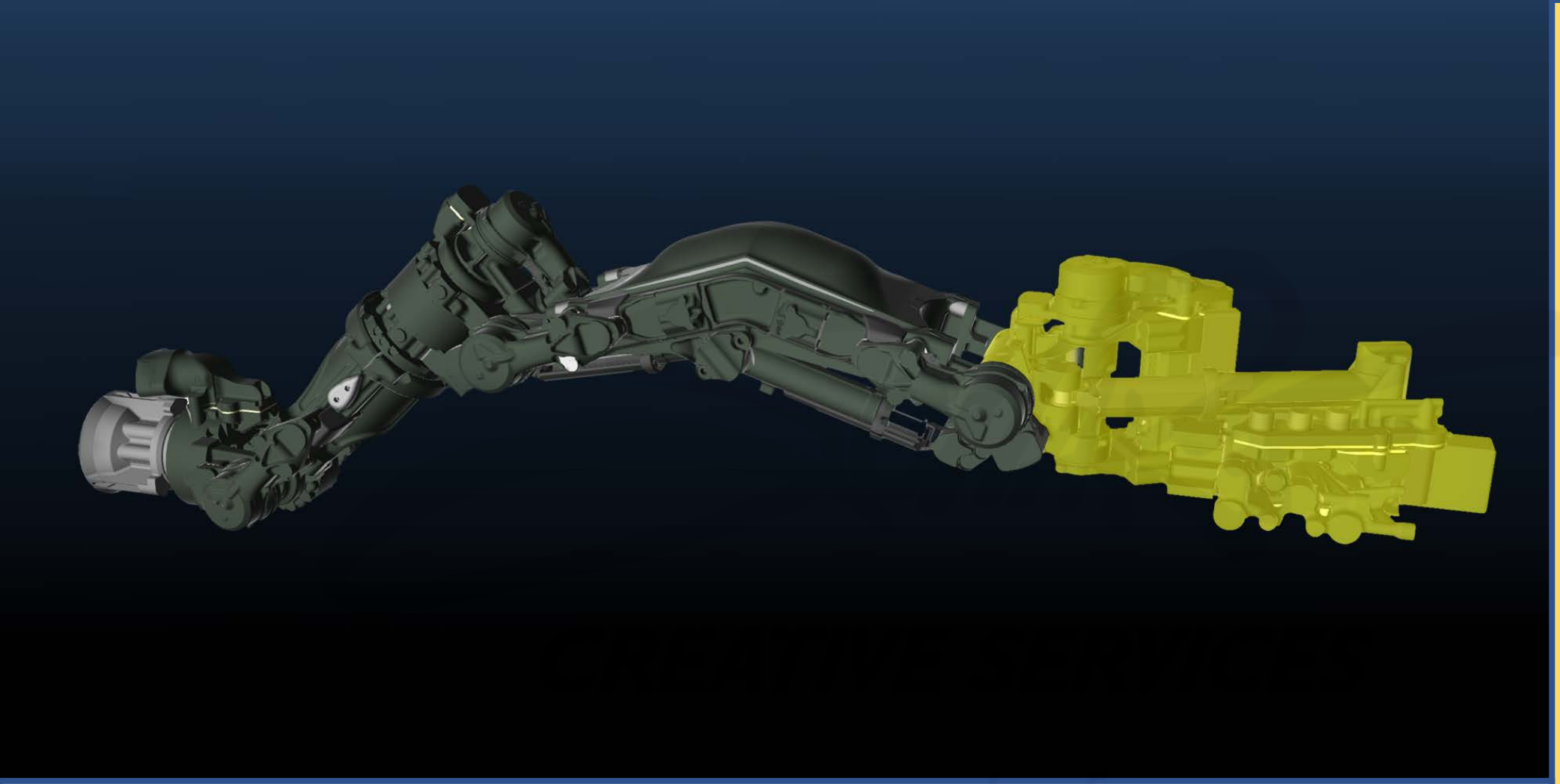

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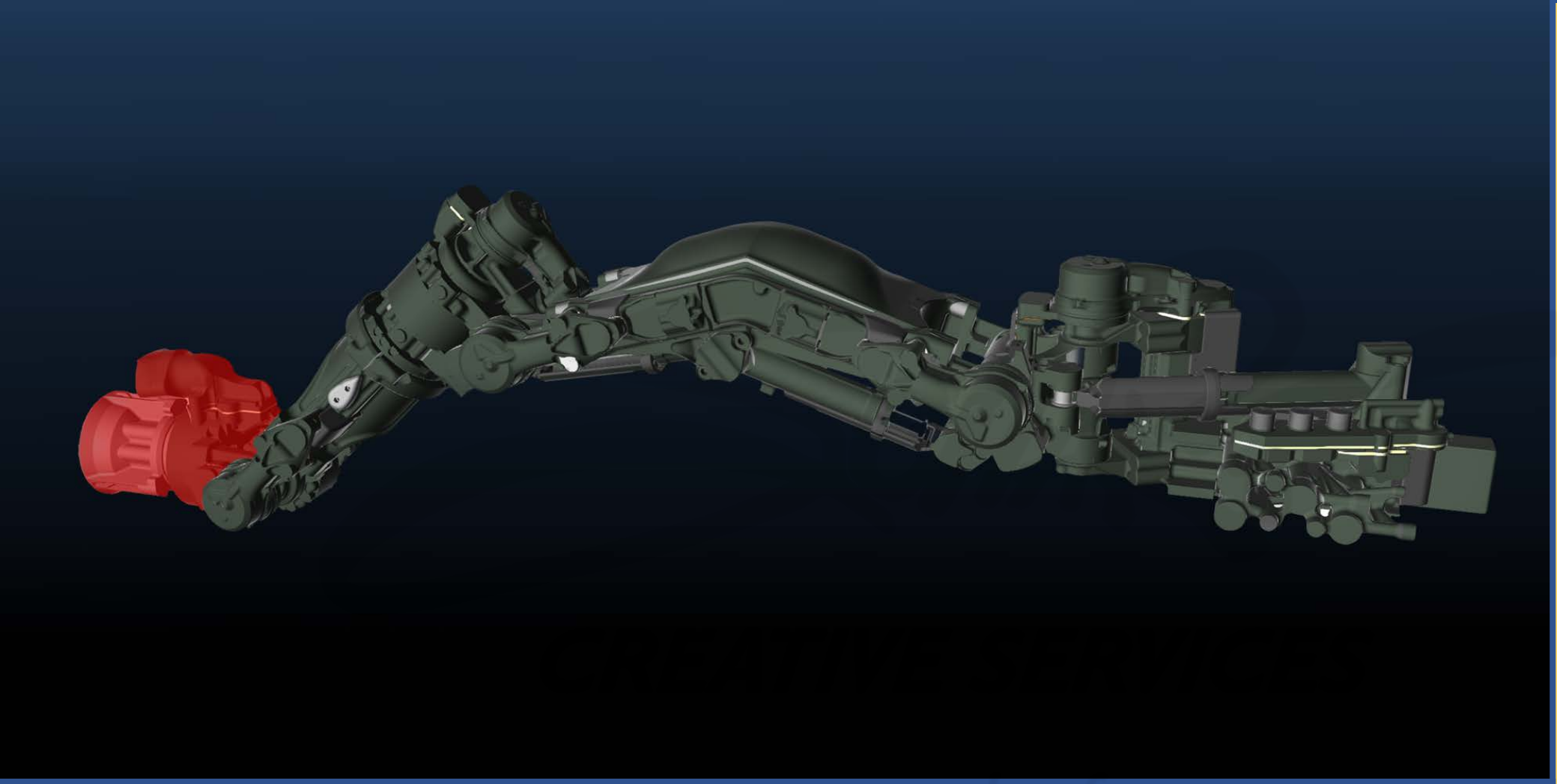

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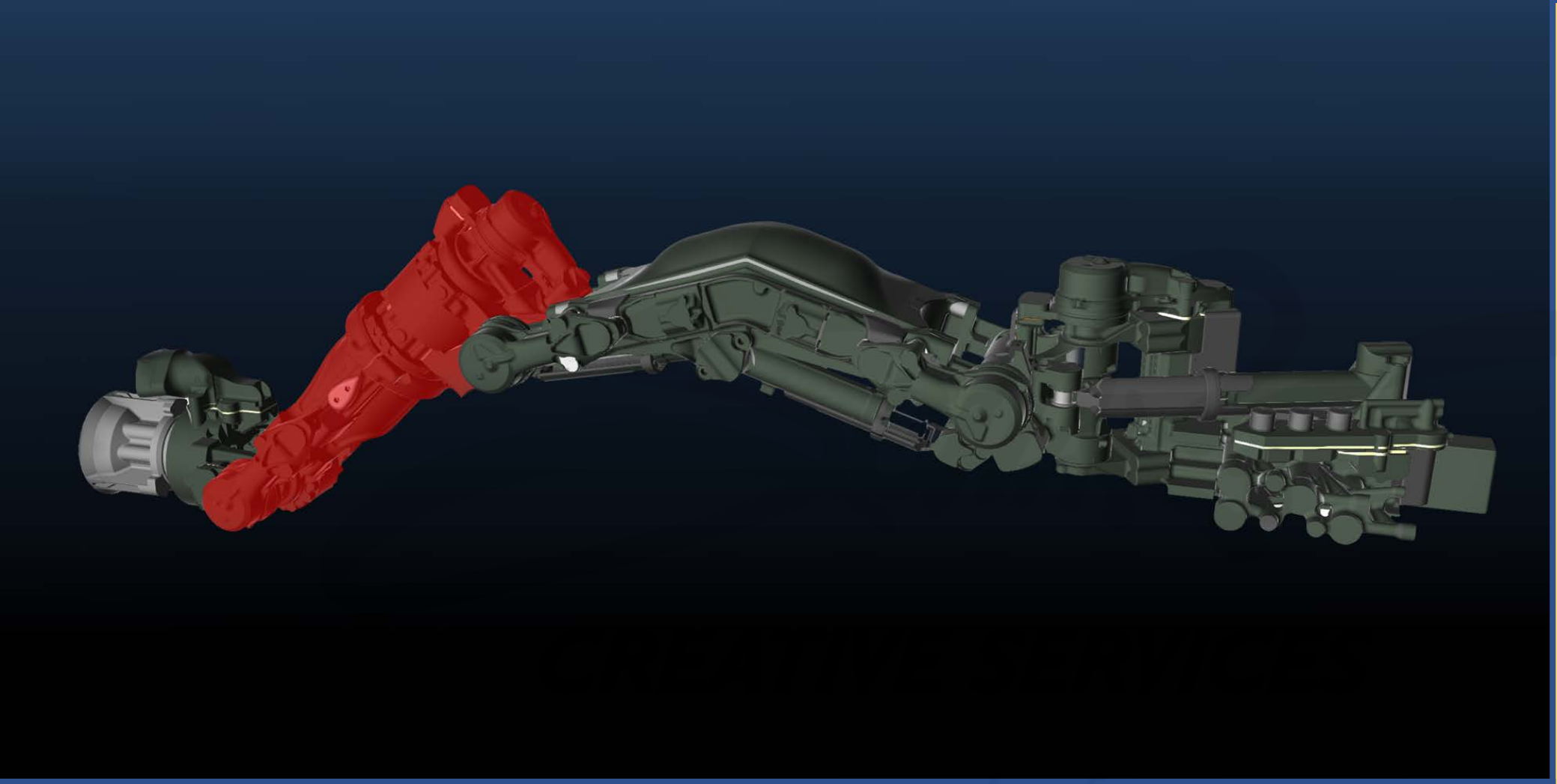

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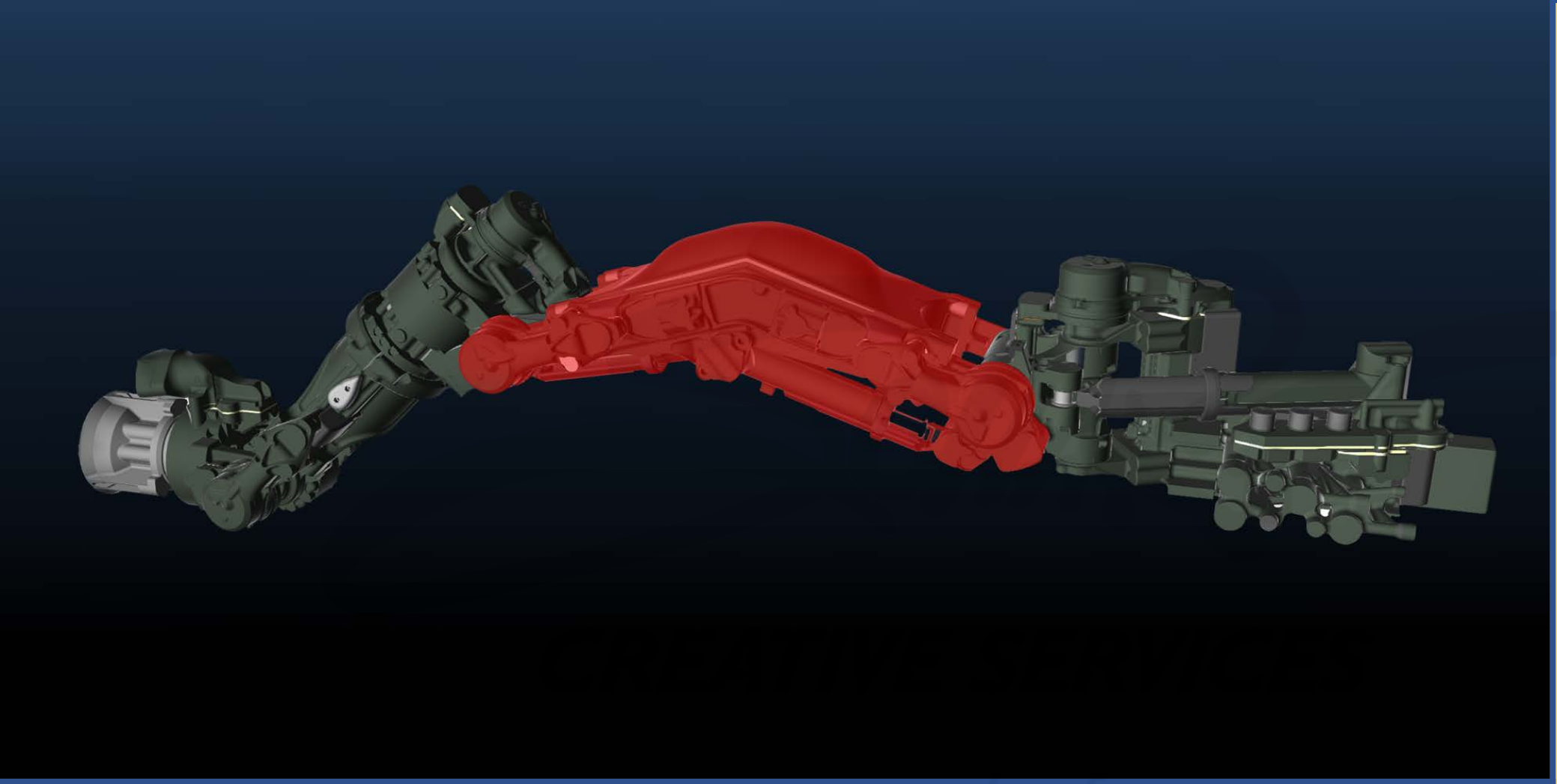

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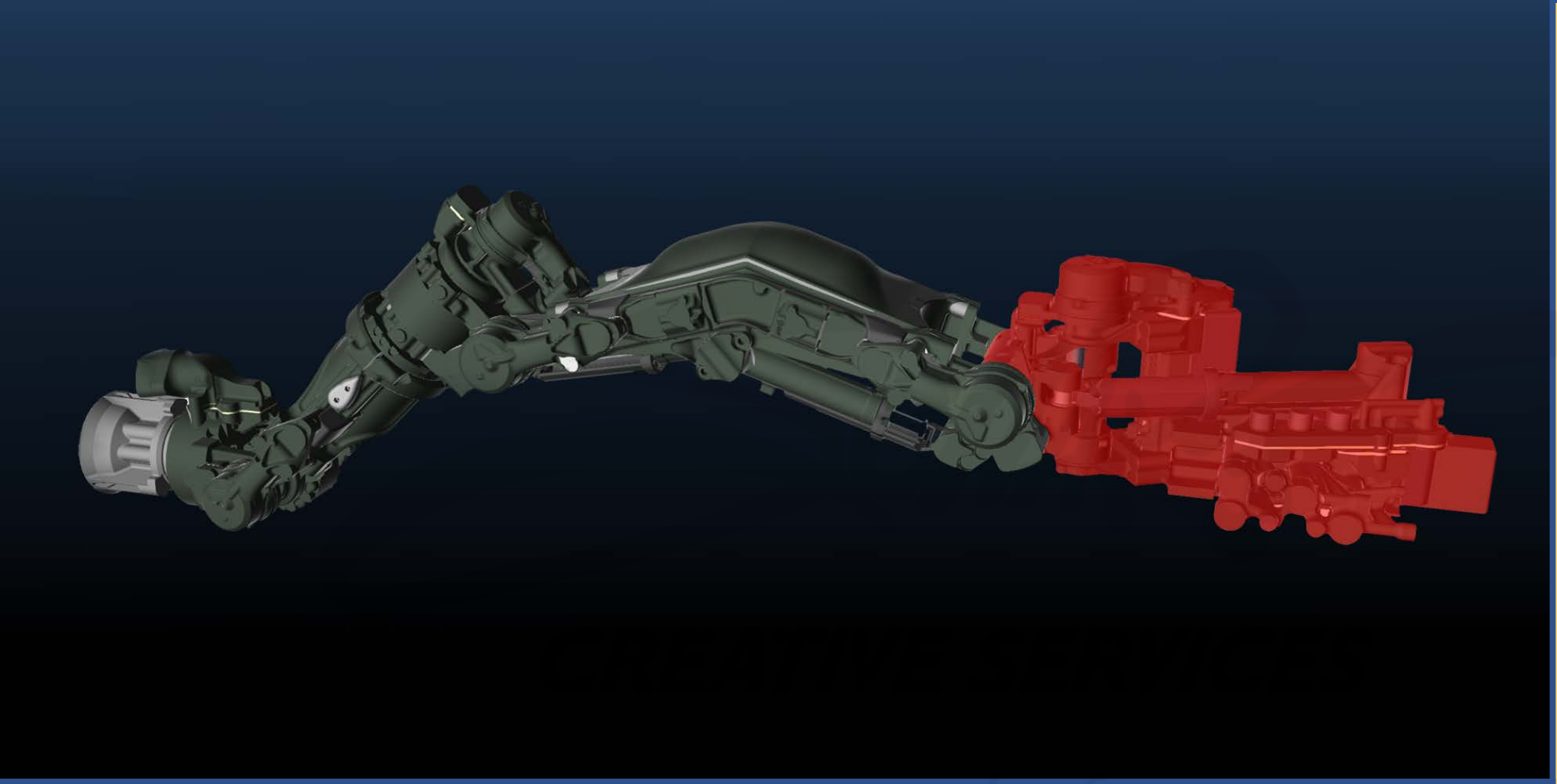

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