**Launch Screen Discussions**

1. Pre Launch:

**Explanation of Changes & Improvements:**

* **Message Area:**
  + **Pre-Launch:** Still prominently displays SET 1ST GEAR. This area will later transition to LAUNCH READY, GO, GO, GO!!!, and then your post-launch performance metrics (Accel: X.XXs, Clutch: X.XXs) along with the XXX kph speed (which will only appear *after* a launch, effectively replacing messages).
* **Left Side - Enhanced Clutch Bar (Clutch Position):**
  + **Label:** "Opt Bite Point" and "Clutch Now" remain.
  + **Vertical Bar:** This is now your primary visual for clutch modulation.
    - **Purple Bite Zone:** Instead of just a thin line, the purple indicator for Opt Bite Point is now a slightly wider **zone** on the bar, acknowledging that a perfect single point might be difficult to hit consistently.
    - **Visual Match Indicator (Implicit):** You could have a small green light or symbol pop up/change color next to "Opt Bite Point" or on the bar itself when your Clutch Now value is within this optimal bite zone.
* **Middle - Gear & RPM:**
  + **Gear Indicator:** Remains large and central (N then 1).
  + **Current RPM:** Now a large, prominent digital readout.
    - **Dynamic Color:** The RPM number itself could change color (e.g., **Yellow** if too low, **Green** when in your ideal launch RPM range, **Red** if too high).
* **Right Side - Dedicated RPM Vertical Bar (RPM Target):**
  + This vertical bar has **replaced the throttle bar**.
  + **Purpose:** It acts as a visual RPM gauge, but its primary function is to clearly show your **ideal launch RPM target zone**.
  + **Green Band:** A prominent **green band** on this vertical bar indicates the optimal RPM range you discovered through practice.
  + **Current RPM Indicator:** A smaller indicator on this bar shows your current engine RPM relative to the ideal zone.
  + **Benefit:** This provides a strong visual cue to hold your RPM *in that green zone* before releasing the clutch.
* **Bottom Area - Re-purposed for Wheel Spin (Post-Launch):**
  + **Pre-Launch:** The "TURN OFF TC" message can still be here, clearly visible.
  + **During/Post-Launch:** This area will dynamically change. It will be replaced by a **prominent, color-coded Wheel Spin Indicator**. This indicator will appear *after* you initiate the launch and the "GO, GO, GO!!!" message clears.
    - **Example Wheel Spin Display:**
      * Could be a large numerical percentage (e.g., "SLIP: 15%")
      * Could be a horizontal bar graph that fills up.
      * **Color-Coded:**
        + **Green:** Ideal or low slip (e.g., 0-5%)
        + **Yellow:** Moderate slip (e.g., 5-15%)
        + **Red:** Excessive slip (e.g., >15%)
    - This provides critical real-time feedback on how well you're managing traction.

This revised layout focuses on giving you actionable visual cues for the two most critical parameters of a dual-clutch start: **maintaining optimal launch RPM** and **modulating the clutch precisely through its bite point** while managing wheelspin.

1. Launch Ready

**Enhancement Suggestions for "LAUNCH READY":**

1. **Top Message Area (LAUNCH READY):**
   * **My Thoughts:** This message is perfect for its purpose. It's clear and unambiguous.
   * **Enhancement Suggestion:** No major change needed here. It clearly communicates the state.
2. **Left Side - Enhanced Clutch Bar (Opt Bite Point & Clutch Now):**
   * **My Thoughts:** The visual of the clutch bar with the Purple Bite Zone is fantastic for setting up the dual clutch. At this stage, your Clutch Now should be 100 (fully disengaged).
   * **Enhancement Suggestion:**
     + **Staging Visual:** If your dual clutch setup involves staging the *primary* paddle to the bite point *before* the launch, make sure the "Opt Bite Point" and its purple zone are clearly visible and indicate when your Clutch Now value is at that point. A subtle visual cue (e.g., a green light next to "Opt Bite Point") could confirm you're correctly staged.
3. **Middle - Gear (1) & RPM Value:**
   * **My Thoughts:** Gear "1" is clear. The RPM value is central.
   * **Enhancement Suggestions (Crucial for this phase):**
     + **Dynamic RPM Color:** Reiterate and ensure the digital RPM number changes color based on your target RPM zone:
       - **Green:** When RPM is within the ideal launch range.
       - **Yellow:** When RPM is slightly below or above the ideal range (e.g., +/- 500 RPM).
       - **Red:** When RPM is significantly outside the ideal range.
     + **RPM Delta:** Consider a small numerical display next to the large RPM number showing +XXX or -XXX RPM, indicating the delta from the *center* of your ideal target RPM. This allows for ultra-fine adjustment.
4. **Right Side - Dedicated RPM Vertical Bar (with Green Target Band):**
   * **My Thoughts:** This is now your primary RPM visual guide. It's perfectly placed to show your target zone.
   * **Enhancement Suggestion:**
     + **Clarity of Current RPM:** Ensure the indicator for your current RPM on this vertical bar is very clear and distinct from the green target band. It could be a contrasting color or a larger marker. The goal is to put the current marker *into* the green band.
5. **Bottom Area (TURN OFF TC):**
   * **My Thoughts:** Still relevant here.
   * **Enhancement Suggestion:** No change needed for this phase. The dynamic replacement with Wheel Spin will occur later.

**Overall for "LAUNCH READY":** The key here is **precision in RPM management**. The dash should serve as a clear, immediate feedback loop, guiding you to hit and hold your optimal launch RPM and ensure your clutch staging (if applicable) is perfect. The color-coding and target zones will be your best friends for consistency.

1. Launch phase

**Purpose of this Phase:** This is the moment of truth. You've released the secondary clutch and are now actively modulating the primary (bite point) clutch paddle, trying to convert engine power into forward motion without bogging down or excessive wheelspin. Real-time, highly visible feedback is paramount.

**Enhancement Suggestions for "GO, GO, GO!!!":**

1. **Top Message Area (GO, GO, GO!!!):**
   * **My Thoughts:** The message itself is excellent for a clear command.
   * **Enhancement Suggestion:**
     + **Reaction Time Cue:** To further improve reaction time, consider adding a **brief, full-screen flash** (e.g., white or bright green) that occurs *simultaneously* with the appearance of "GO, GO, GO!!!". This mimics the starting lights and can train your visual reaction.
     + **Rapid Transition:** This message should be **very short-lived**. It should appear for perhaps 0.5-1.0 seconds and then disappear entirely, immediately replaced by the *live performance metrics* (e.g., RPM, Speed, and crucial Wheel Spin). This clears the visual space for data you need *during* acceleration.
2. **Left Side - Enhanced Clutch Bar (Opt Bite Point & Clutch Now):**
   * **My Thoughts:** Clutch Now 45 indicates you're at the bite point. The visual of the clutch bar with the Purple Bite Zone is still valuable.
   * **Enhancement Suggestions:**
     + **Clutch Release Rate Visual:** This is where the *rate* of clutch release is critical for the dual clutch. Instead of just a static number, you could add a subtle **visual indicator** next to the clutch bar or Clutch Now value that gives feedback on your *speed of release*.
       - Imagine a small, dynamic indicator that is **Green** if your release speed is optimal, **Yellow** if it's slightly too slow (slipping too much), and **Red** if it's too fast (dumping the clutch). This is a challenging but high-value piece of feedback.
       - The LaunchPlugin\_ClutchReleaseTime property will be a key part of determining what's "optimal" for this rate.
3. **Middle - Gear (1) & RPM Value:**
   * **My Thoughts:** RPM management is the other pillar of a good launch. Your current RPM, dynamic color-coding, and RPM bar are all essential.
   * **Enhancement Suggestions:**
     + **RPM Dynamic Color:** Ensure the digital RPM value constantly updates its color (Green for ideal, Yellow for slightly off, Red for major bog/flare) as you accelerate.
     + **RPM Bar Feedback:** The **RPM vertical bar** on the right should be *constantly active*. Its current RPM indicator should fluidly move, guiding you to keep the engine in its optimal torque band for acceleration, not just the initial launch RPM.
     + **Minimalist Design:** Consider slightly reducing the size of the large '1' gear indicator here, or making it less prominent, to free up visual space for the more dynamic RPM and Wheel Spin data. The driver knows they are in 1st.
4. **Speed (5 kph):**
   * **My Thoughts:** Good to have for immediate confirmation of forward motion.
   * **Enhancement Suggestion:** Keep it prominent.
5. **Bottom Area - Crucial Wheel Spin Indicator** (replacing TURN OFF TC):\*\*
   * **My Thoughts:** This is where your TURN OFF TC message *must vanish* and be immediately replaced by **real-time wheel spin feedback**. This is paramount for preventing excessive slip.
   * **Enhancement Suggestions (Highly Recommended):**
     + **Prominent Placement:** This area is perfect for it.
     + **Clear Visual:** A large, instantly readable display. Options:
       - **Large Percentage:** e.g., SLIP: 12%
       - **Horizontal Bar Graph:** A bar that fills up (e.g., from left to right) as slip increases.
     + **Aggressive Color-Coding:** This needs to be attention-grabbing:
       - **Green:** For optimal, controlled slip (often a small amount of slip is faster than zero slip). Define your "optimal slip" range (e.g., 0-5%).
       - **Yellow:** Warning, some traction loss (e.g., 5-15%). Prompt the driver to ease off clutch/throttle.
       - **Red (Flashing/Blaring):** Excessive, uncontrolled wheelspin (>15%). Immediate and significant modulation required.
     + **Auditory Cue (If possible):** A short, sharp beep or tone that activates when slip enters the "Red" zone. This allows you to react without taking your eyes off the track.

**In Summary for "GO, GO, GO!!!":** This phase requires dynamic feedback that allows for immediate micro-adjustments. The dash needs to visually scream at you if you're getting too much wheel spin or bogging down, while guiding you through the clutch release and RPM range. The focus shifts from "setup" to "execution and modulation."

Other messages in top area: TC ACTIVE, WHEELSPIN

1. Post Launch

**Purpose of this Phase:**

To give you a very quick assessment of your launch, allowing you to learn and refine your technique.

**Enhancement Suggestions:**

1. **Top Message Area (Post-Launch Metrics):**
   * This is where we display the key performance data from your launch.
   * **Crucial Addition:** As you requested, this area will now include:
     + **Acceleration Time:** The time it took to reach a specific speed (e.g., 60 kph). Example: Accel: 2.15s.
     + **Clutch Release Time:** The time it took you to fully release the clutch. Example: Clutch: 0.88s.
     + **Deltas (in brackets):** Show how these values compare to your *best* previous launch.
       - Example: If your best accel time was 2.05s, display Accel: 2.15s (+0.10s).
       - If your best clutch time was 0.75s, display Clutch: 0.88s (+0.13s).
     + **Color-Coding:** This is vital for quick interpretation:
       - **Green:** If the current launch is *better* than your previous best (negative delta).
       - **White/Neutral:** If the current launch is the same as your previous best (zero delta).
       - **Red:** If the current launch is *worse* than your previous best (positive delta).
       - Example: Accel: 2.10s (-0.05s) (Excellent launch!)
       - Example: Clutch: 0.92s (+0.07s) (Slightly slower clutch release)
2. **Left Side - Enhanced Clutch Bar:**
   * This continues to show your clutch position.
   * **Post-Launch Use:** After the launch, this primarily serves as a visual record of your clutch release point during the launch. It's less critical for *active* driving at this point.
3. **Middle - Gear & RPM:**
   * Gear will likely show 2 very quickly.
   * RPM is still important to monitor, but the focus shifts to the *shift point* for 2nd gear.
4. **Right Side - RPM Vertical Bar:**
   * This is now less about the *launch* RPM and more about your general RPM range during acceleration.
5. **Bottom Area - Wheel Spin Indicator:**
   * This remains crucial, showing your wheel spin *throughout* the acceleration phase.

**Overall for Image 4:**

This image is a brief "report card" on your launch. The color-coded deltas in the top area give you instant feedback on whether you improved, maintained, or worsened your launch technique. This data allows you to quickly adjust your next attempt.

**Analysis Dash**

Okay, I've received the screenshot of your tablet results dash. It looks like a clean, tabular display for reviewing your past launches, which is a great starting point for analyzing trends.

You're right that in a race, the pop-up on the main dash is all you need for immediate feedback. The tablet results dash, being for practice, allows for a much deeper dive into the "why" behind your launch performance.

Given its purpose for practice sessions, here are some additional post-event information points you could include on your results dash to help you further improve:

**Recommended Additional Post-Event Info for the Results Dash**

The goal here is to provide more context and granular data points that go beyond just the overall 0-100 time and clutch release time, helping you diagnose specific issues and understand optimal behaviors.

**1. Deeper Launch Metrics:**

* **LaunchPlugin\_LaunchRPM (or PreLaunchRPM):** The engine RPM just as the secondary clutch was released.
  + *Why:* This is a *critical* variable you're trying to tune. Seeing this alongside Accel (s) will directly show you which initial RPMs yield the best results for each car/track combo.
* **LaunchPlugin\_MinRPM (or RPMDrop):** The lowest RPM the engine dropped to immediately after the launch.
  + *Why:* Indicates if you bogged down too much. A significant drop means you might have too little RPM or dumped the clutch too quickly for the given RPM.
* **LaunchPlugin\_MaxWheelSlipPercentage (or PeakSlip):** The highest percentage of wheel slip experienced during the 0-100 KPH run.
  + *Why:* Direct insight into traction management. Too high, and you're spinning power away. Too low, and you might not be launching aggressively enough. This is hugely valuable for diagnosing problems.
* **LaunchPlugin\_TimeAtExcessiveSlip (or SlipDuration):** The duration (in ms or s) the car experienced slip above a certain threshold (e.g., above 15% or 20%).
  + *Why:* Helps differentiate a quick, controlled burst of slip from prolonged, wasted wheelspin.
* **LaunchPlugin\_PeakGForce (or MaxAccelG):** The highest longitudinal G-force achieved during the launch.
  + *Why:* A great indicator of how efficiently the car is putting power down. Higher peak G generally means a stronger hook-up.
* **LaunchPlugin\_AvgGForce (or AverageAccelG):** The average longitudinal G-force over the 0-100 KPH period.
  + *Why:* A more consistent metric of overall launch power delivery.

**2. Contextual Data (for deeper analysis):**

* **CarName:** (e.g., Porsche 911 GT3 Cup, Dallara F3, Formula Ford).
  + *Why:* Optimal launch parameters vary significantly by car. Grouping/filtering by car is essential for accurate analysis.
* **TrackName:** (e.g., Lime Rock Park, Spa-Francorchamps).
  + *Why:* Different tracks have different start line gradients and grip levels, which affect optimal launch technique.
* **TrackTemperature / AirTemperature:** (If SimHub can grab these from iRacing).
  + *Why:* Environmental conditions greatly affect tire grip.
* **FuelLevelAtLaunch:** (e.g., 20L, Full).
  + *Why:* Affects total car weight and thus traction and acceleration.
* **TractionControlSetting / ABSSetting (if applicable):**
  + *Why:* Even if you turn TC off, sometimes it has minimal settings. Or if you want to experiment with minimal TC/ABS.

**3. Session/Consistency Data:**

* **SessionBest\_Accel / SessionBest\_Clutch:** The best 0-100 time and clutch release time achieved *in the current practice session*.
  + *Why:* Allows you to quickly see your progress within a dedicated practice block.
* **GlobalBest\_Accel / GlobalBest\_Clutch:** Your overall best 0-100 time and clutch release time ever recorded for that car/track combination (if your plugin tracks this across sessions).
  + *Why:* Provides a long-term target and progress tracker.
* **AttemptNumber:** (As you likely have now, Launch #).
  + *Why:* Helps track progress chronologically.

**How to Display these on the Tablet Dash:**

* **Expand the Table:** Add new columns to your existing table.
* **Filter/Sort Options:** If possible, add controls to sort the table by Accel (s), Launch RPM, MaxWheelSlipPercentage, etc.
* **Session Summary:** Below the table, you could have a small section that displays:
  + Avg Accel for the session
  + Avg Clutch Release Time for the session
  + Avg Launch RPM for the session
  + Highest Peak Slip for the session
  + Best Accel for the session
  + Best Clutch Release for the session
* **Color Coding:** Continue to use color coding for Accel (s) and Clutch (s) to indicate improvement or regression relative to a personal best (session or global).

By including these additional data points, your tablet dash will transform from a simple record keeper into a powerful analytical tool, allowing you to identify correlations between your technique (RPM, clutch release, slip) and your actual launch performance.

Session Summary:

Best Accel: 2.080s (Porsche Cup, Launch #2)

Best Clutch: 0.650s (F3, Launch #6)

Avg Accel (Current Session): 2.240s

Avg Clutch (Current Session): 0.812s

Avg Launch RPM (Current Session): 780

**RPM Enhancements for Main Launch Dash (During the Race)**

These enhancements are designed for real-time feedback to help you hit your optimal launch RPM and manage it throughout the acceleration phase.

1. **Dynamic RPM Value Color-Coding:**
   * **Location:** The large digital RPM readout in the middle of your dash (under the gear indicator).
   * **Functionality:** The color of the RPM value changes based on its relation to your pre-defined optimal launch RPM range.
     + **Green:** When your RPM is precisely within the ideal launch range.
     + **Yellow:** When your RPM is slightly below or above the ideal range (e.g., within +/- 500 RPM).
     + **Red:** When your RPM is significantly outside the ideal range (e.g., critically too low, leading to bogging, or too high, leading to excessive uncontrolled wheelspin).
   * **Benefit:** Provides immediate, glanceable feedback on whether you've hit your target RPM and are maintaining it.
2. **RPM Target Zone (Visual Band on RPM Bar):**
   * **Location:** The **new dedicated RPM vertical bar** on the right side of your dash (which replaced the throttle bar).
   * **Functionality:** A distinct **green-colored band** is displayed on this vertical bar, representing your ideal target RPM range for a standing start.
   * **Benefit:** Gives you a clear visual target to aim for with your throttle input before the launch and during the initial phase of acceleration.
3. **Current RPM Indicator on Bar:**
   * **Location:** On the new dedicated RPM vertical bar.
   * **Functionality:** A clear marker or indicator that dynamically moves along the vertical bar, showing your current engine RPM relative to the entire RPM scale and, critically, relative to the green target zone.
   * **Benefit:** Allows for quick, intuitive assessment of your RPM position relative to your goal.
4. **RPM Delta (Optional, for finer tuning):**
   * **Location:** A small numerical display near the main digital RPM readout.
   * **Functionality:** Shows +XXX or -XXX RPM, indicating how far your current RPM is from the *center* of your ideal launch RPM zone.
   * **Benefit:** For advanced fine-tuning, allowing you to consistently hit the precise RPM for optimal launches.
5. **Active RPM Bar Feedback (During Launch):**
   * **Location:** The dedicated RPM vertical bar.
   * **Functionality:** During the actual launch (after the "GO, GO, GO!!!" message), this bar continuously provides feedback. If your RPM drops below the optimal power band (bogging) or flares excessively without corresponding speed gain (due to wheelspin), the indicator on the bar could flash, change color (e.g., Red), or become more prominent to alert you.
   * **Benefit:** Guides your throttle application and clutch modulation during the critical acceleration phase.

**RPM Enhancements for Tablet Results Dash (Post-Practice Analysis)**

These enhancements provide historical data and averages to help you analyze trends and correlations between your RPM management and overall launch performance.

1. **Launch RPM Column:**
   * **Location:** A new column in your main results table.
   * **Data Stored:** The exact engine RPM recorded at the moment the secondary clutch was fully released (or primary clutch engagement began).
   * **Benefit:** This is a crucial data point for correlating your initial RPM choice with the resulting 0-100 KPH time and wheel slip. You can identify the RPM range that consistently gives you the best launches for specific cars and tracks.
2. **Min RPM Column:**
   * **Location:** A new column in your main results table.
   * **Data Stored:** The lowest RPM the engine dropped to immediately after the initial clutch engagement during the launch.
   * **Benefit:** Helps diagnose bogging. A low Min RPM often indicates too little initial RPM, too fast a clutch release, or insufficient throttle for the given clutch action.
3. **Avg Launch RPM (Current Session) in Session Summary:**
   * **Location:** In the "Session Summary" section below your results table.
   * **Data Stored:** The average of all Launch RPM values recorded in the current practice session.
   * **Benefit:** Provides a quick overview of your RPM consistency throughout a practice session.

**Coding**

To implement the RPM enhancements, you'll be primarily using one core iRacing property available through SimHub, and then creating or leveraging custom plugin properties and Dash Studio logic to build out the more advanced features.

Here's the breakdown:

**1. Core iRacing/SimHub Property (Built-in)**

* **Data.EngineRPM**:
  + **What it is:** This is the live, current engine RPM value provided directly by iRacing through SimHub.
  + **Where it's used:**
    - The main digital RPM display on your launch dash.
    - The current value indicator on your RPM vertical bar.
    - The input for the color-coding logic (e.g., green/yellow/red RPM readout).
    - The source for calculating Launch RPM and Min RPM within your custom plugin.

**2. Custom Plugin Properties (from your plugin.cs file)**

These are the properties you've already created or would need to create/modify in your plugin.cs to capture specific RPM snapshots during the launch event.

* **LaunchPlugin\_LaunchRPM**:
  + **What it is:** This custom property should capture the Data.EngineRPM value at the *exact moment* your launch sequence is detected (e.g., when you release the secondary clutch and the LaunchPlugin\_LaunchModeActive becomes true, or when the clutch value starts to drop significantly).
  + **Where it's used:** As a column in your **tablet results dash** to record the RPM at the start of each launch.
* **LaunchPlugin\_MinRPM**:
  + **What it is:** This custom property should track the *lowest* Data.EngineRPM value recorded during the active 0-100 KPH timing window (LaunchPlugin\_IsTiming0To100).
  + **Where it's used:** As a column in your **tablet results dash** to indicate if the engine bogged down significantly during the launch.
* **LaunchPlugin\_AvgLaunchRPM**: (For Session Summary)
  + **What it is:** This custom property would be calculated within your plugin to average all the LaunchPlugin\_LaunchRPM values recorded within the current session.
  + **Where it's used:** In the **tablet results dash's session summary**.

**3. SimHub Dash Studio Logic (Using the above properties)**

This is where you'll use conditions and styling within Dash Studio to create the visual enhancements.

* **Defining Your Optimal RPM Range (User Input):**
  + You'll need to define your "Optimal Launch RPM" range. This is *not* a dynamic iRacing property but a value you determine through practice.
  + **Implementation:** You can either:
    - **Hardcode:** Set OptimalRPM\_LowerBound and OptimalRPM\_UpperBound directly in the formulas for your dash components (e.g., 6800 and 7200). This is simple to start.
    - **Dashboard Properties (Recommended):** Create new "User Properties" within your SimHub dashboard (e.g., OptimalLaunchRPM\_Min, OptimalLaunchRPM\_Max). This allows you to easily adjust the target range directly from the SimHub Dash Studio editor without touching code.
    - **Plugin Property (Advanced):** If you want to store optimal RPM per car/track, your plugin could expose these values, but that's more complex.
* **Color-Coding the Digital RPM Display:**
  + **Component:** Your main digital RPM display (a "Text" component in SimHub Dash Studio).
  + **Logic (in "Styles" -> "Foreground color override"):**

Code snippet

if (Data.EngineRPM >= [OptimalLaunchRPM\_Min] && Data.EngineRPM <= [OptimalLaunchRPM\_Max], '#00FF00', // Green if within optimal range

if (Data.EngineRPM >= [OptimalLaunchRPM\_Min] - 500 && Data.EngineRPM <= [OptimalLaunchRPM\_Max] + 500, '#FFFF00', // Yellow if slightly off

'#FF0000')) // Red if way off

(Replace [OptimalLaunchRPM\_Min] and [OptimalLaunchRPM\_Max] with your chosen values or dashboard properties).

* **Creating the RPM Vertical Bar with Green Target Zone:**
  + **Component:** Use a "Linear Gauge" in Dash Studio for the main vertical bar. Set its Value to Data.EngineRPM and its Min Value and Max Value to the car's full RPM range (e.g., 0 to 9000).
  + **Green Zone:** Add a "Rectangle" or "Bar" component **inside** the Linear Gauge.
    - **Position & Size:** Dynamically position and size this rectangle to cover the [OptimalLaunchRPM\_Min] to [OptimalLaunchRPM\_Max] range on the gauge. This usually involves setting its Y position and Height using formulas based on the gauge's total height and your RPM bounds.
    - **Color:** Set its fill color to green with some transparency.
  + **Current RPM Indicator:** The Linear Gauge itself will have an indicator for Data.EngineRPM. You can style this indicator to be prominent.
* **RPM Delta Display:**
  + **Component:** A "Text" component.
  + **Logic (in "Text" field):**

Code snippet

format('{0:+0} RPM', Data.EngineRPM - (([OptimalLaunchRPM\_Min] + [OptimalLaunchRPM\_Max]) / 2))

This calculates the difference from the center of your optimal range.

By combining Data.EngineRPM with your custom plugin properties and clever SimHub Dash Studio logic, you'll be able to create all the RPM enhancements we discussed!

**PARAMETERS**

**✅ Live Parameters (Good for Dash Alerts)**

These update in real time and can be used to **trigger visibility, alerts, animations**:

| **Parameter** | **Description** | **Live Behavior** |
| --- | --- | --- |
| LaunchPlugin.LaunchInProgress | True while a launch is actively being timed | 🔁 Continuous while in launch window |
| LaunchPlugin.BoggedDown | True during the launch if RPM drops too far | 🔁 Stays true during launch; resets after |
| LaunchPlugin.WheelSpinDetected | True if traction loss exceeds threshold | 🔁 Live — active as long as wheelspin is present |
| LaunchPlugin.AntiStallActive | True if anti-stall logic is triggered | 🔁 Live flag — good for warnings |
| LaunchPlugin.LaunchModeActive | True if manual launch mode is toggled | 🔁 Toggle state, visible as long as active |
| LaunchPlugin.IsTiming0To100 | True while 0–100 km/h timer is active | 🔁 Live — for visual progress indication |

**⚠️ Latched / One-Shot Parameters (Recorded in CSV, not always ideal for alerts)**

These are designed for **post-launch analysis** or **CSV summary**, and don’t persist as live signals unless manually reset or updated:

| **Parameter** | **Description** | **Behavior** |
| --- | --- | --- |
| LaunchPlugin.ClutchReleaseTime | Recorded only once per launch | ⏱️ Latched |
| LaunchPlugin.ClutchReleaseDelta | Recorded after launch ends | ⏱️ Latched |
| LaunchPlugin.ZeroTo100Time | Captured at end of 0–100 run | ⏱️ Latched |
| LaunchPlugin.BitePointInTargetRange | Evaluated post-launch | ✅ Latches until next launch |
| LaunchPlugin.ThrottleInTargetRange | Evaluated post-launch | ✅ Latches until next launch |
| LaunchPlugin.RPMInTargetRange | Evaluated post-launch | ✅ Latches until next launch |
| LaunchPlugin.OptimalXxxTolerance values | Static settings | ⚙️ Configuration only |

**🔘 Momentary Triggers (User Input)**

These are intended to flash true briefly when a control is pressed (like a button or dashboard action):

| **Parameter** | **Description** |
| --- | --- |
| LaunchPlugin.MsgCxPressed | Momentary true when cancel button is hit |
| ControlMapperPlugin.MsgGo, etc. | Brief true pulses — must use changed(...) logic in dash |

**🟢 Ideal for Dash Alerts**

Here are your best choices for **real-time dashboards**:

* LaunchPlugin.WheelSpinDetected → show red warning when true
* LaunchPlugin.BoggedDown → warning or animation (e.g., “Bog!”)
* LaunchPlugin.AntiStallActive → anti-stall alert indicator
* LaunchPlugin.IsTiming0To100 → visual progress (e.g., a 0–100 km/h bar)
* LaunchPlugin.LaunchInProgress → show launch-mode elements
* LaunchPlugin.LaunchModeActive → show/hide UI depending on manual mode