



**FIRST<sup>®</sup>**  
**FORWARD<sup>SM</sup>**

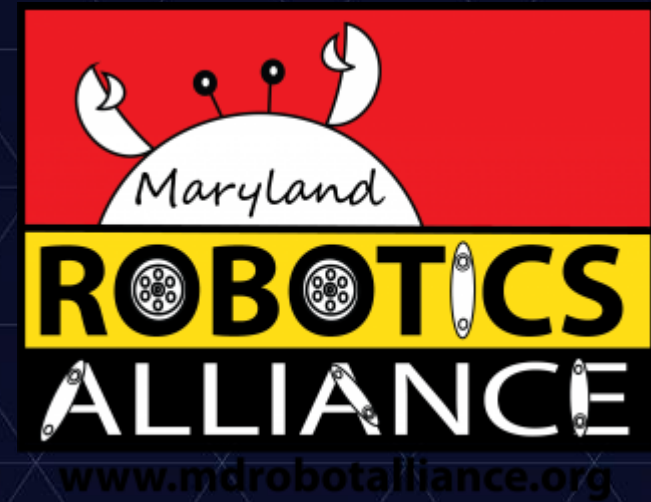
PRESENTED BY **Qualcomm**



# Maryland Robotics Alliance (MRA) Back to Build 2022

## *FIRST* Technical Advisor (FTA) Presentation

Presented By  
Ron Therrien  
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# Updates

- [Rules](#) and [Team Updates](#)
- [New Rule Numbering Method](#)
- RoboRIO Updates
  - R701: Minimum Version for 2022 is v2022\_v3.0 or later (as of January 14th)
- Driver Station Software
- Windows Updates

This rule is in *Section 9, Robot Construction Rules*

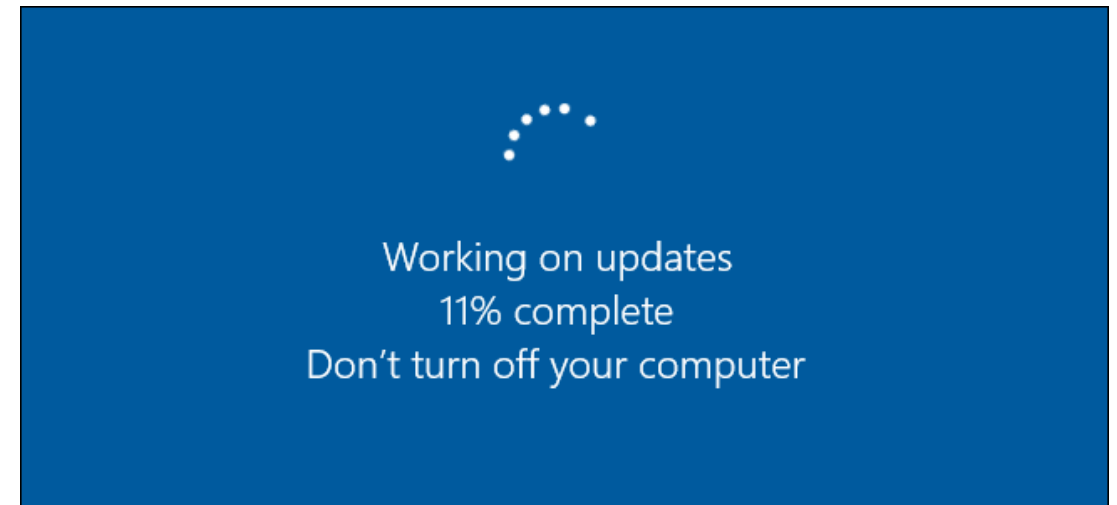
↓  
**R710**

↑ This rule is in *Subsection 7, Control, Command, & Signals Systems*

↑ This rule is the 10<sup>th</sup> rule in that subsection

# Windows Updates Refresher

- If you haven't used your Driver Station since 2019 turn it on and update it!
- Let it fully update.
- If all else fails disable Windows Update
  - From an administrator command prompt
  - Stop: `net stop wuauerv`
  - Start: `net start wuauerv`
- Note: Windows 11 is not *officially* supported yet, but may work.



# OPERATOR CONSOLE Configuration Software

- Configure your Firewall per R704
  - If all else fails disable your firewall
- Limit Bandwidth Usage To 4 Mbits/second
- Remove unneeded software or startup applications
- Turn off Wi-Fi and Bluetooth
- Remove passwords so the laptop does not get locked
- Fully utilize the TECHNICIAN role

# OPERATOR CONSOLE Configuration Software

- Consider a good quality laptop with an SSD Drive
- Use a dedicated laptop as a OPERATOR CONSOLE
- Consider using an ethernet dongle (aka “Pigtail” or Extension Cable/Adapter) for network connection
- Bring a USB to Ethernet Adapter
  - Even if you don't need it you can lend it to another team



# ⚡ Brownouts ⚡



- Check your batteries!
- WPI 2019 Control System Documentation
  - [RoboRIO Brownout and Understanding Current Draw](#)
- “In order to help maintain battery voltage to preserve itself and other control system components such as the radio during **high current draw events**, the roboRIO contains a staged brownout protection scheme.”
- 6.8V - 6.3V
  - Stage 1 Brownout
  - The DS will record a brownout event in the DS log.
  - System will begin shutting down outputs (PWM, GPIO, Relay, CAN Motor Controllers, etc.) to preserve battery.
- 6.3V – 4.5V
  - State 2 Brownout
  - The controller will disable all User Voltage Rails
- <4.5
  - BLACKOUT

# Conclusion

- Read the rules
- Take advantage of the TECHNICIAN role.
  - Help us help you
- Update all equipment and systems
- Use a dedicated laptop as your OPERATOR CONSOLE
- Be aware of brownouts and know how much current you draw during various stages (Driving, Climbing, Shooting, etc.) to know how they might affect you.



Be Safe  
Have Fun  
ALL ABOARD!

