PitCrew Commander Tutorial Book — FTC Edition

A Student and Mentor Guide to the PitCrew Platform

Build. Plan. Win.

Version 1.0 — FTC Season Guide Updated July 2026 | *the-pitcrew.co*

A Note Before You Begin

This book is written specifically for FIRST Tech Challenge teams. Every example, every workflow, every prompt, and every timeline in this guide is built around the FTC season — from September Kickoff through your League Meets, League Tournament, and State Championship.

PitCrew is not a replacement for your team. It is the most capable assistant your team has ever had. Think of it as having seventeen expert consultants available twenty-four hours a day, seven days a week, who never get tired, never get frustrated, and never miss a deadline.

Your job is to be the decision-maker. PitCrew's job is to do the heavy lifting so you can focus on learning, building, and competing.

Read this book once before Kickoff. Keep it nearby during your first team meeting. Refer to specific chapters as the season progresses. By the end of the year, you will wonder how any team ever competed without it.

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Chapter 1: Understanding the System

What PitCrew Is

PitCrew is a web-based mentor-assist command center that gives your FTC team access to seventeen specialized AI agents, each with a distinct area of expertise. Rather than requiring students to find and consult each agent individually, Commander acts as the central hub. You ask Commander a question, and Commander automatically determines which agents need to be involved, passes the task between them in the correct order, and returns a single, unified answer.

The key insight is this: **you never need to know which agent is handling your question.** You simply ask, and the system works.

The Agent Architecture

The seventeen agents are organized into six departments, each covering a distinct area of your team’s operation.

Department	Agents	Primary Focus
Orchestrator	Commander	Routes all tasks, produces MoSCoW lists
Engineering	Rulebook, CAD-Bot, Ada, Optic, Volt, Scout	Robot design, code, vision, strategy
Operations	OSHA, Ledger, Stress-Test	Safety, budget, quality control
Outreach	Grants, Megaphone	Fundraising, community events — location-aware
Awards	Legacy, Spark, Aesthetics	FIRST Impact, Engineering Inspiration, Industrial Design
Documentation	Scribe	Engineering Notebook
Human Resources	Guide	Student placement and onboarding

The Golden Rule

> **Every student talks to Commander. Commander talks to the agents. The agents talk to each other. You never need to copy and paste between them.**

This is the most important concept in the entire system. When you type a question into the Commander chat, you are not just sending a message to one AI. You are activating a pipeline. Commander reads your question, decides which agents are relevant, passes the task to the first agent, and that agent passes its output to the next agent in the chain — automatically, in the background, while you wait.

Kickoff Context: The Intelligence Layer

When your team completes the Kickoff Wizard for a project, Commander and all 17 specialist agents automatically receive a **Kickoff Context** block containing your game name, selected strategy, Minimum Competitive Robot (MCR) definition, and team constraints. This means you can open Commander on Day 2 of build season and ask *"What should we prioritize this week?"* and receive a game-specific, strategy-aware answer — without pasting any context manually.

What the System Cannot Do

The agents are brilliant advisors, but they have no hands. They cannot physically cut, drill, or assemble a robot; deploy code to a Control Hub without a student connecting a laptop; drive the robot at a League Meet; or attend a community outreach event. The agents produce the plans, the designs, the code, and the documents. **Your students execute them.** This is not a limitation — it is the design. FIRST is a student program, and the learning happens in the doing.

Chapter 2: Getting Started: First Login and Team Setup

Step 1: Open PitCrew

Navigate to the-pitcrew.co in any modern web browser. Chrome, Firefox, and Edge are all supported. Safari works but is not recommended for the best streaming experience.

You will see the PitCrew landing page, which displays all seventeen agent badges and the four main feature cards: Commander Chat, MoSCoW Board, Scribe Notebook, and the Agent Roster.

Step 2: Log In

Click **Sign In** in the sidebar or the **Open Commander** button on the landing page. You will be redirected to the Manus login portal. Log in with your school email address or the account your mentor has set up for you. After logging in, you will be returned to PitCrew automatically.

> **Tip:** If clicking Sign In appears to do nothing, check that your browser is not blocking external navigation or pop-ups. Safari Private Browsing, Firefox Strict ETP, and Brave's aggressive shields mode may block the OAuth redirect.

Step 3: Join Your Team

After signing in for the first time, your mentor or team captain will share an **invite link** with you. Open the link in your browser and click **Join Team**. If you have not received an invite link, ask your team captain to go to **Teams → [Your Team] → Invite tab** and generate one.

Step 4: Select Your Role

On the **Profile** page, select the role that best describes your position on the team. Your role determines which specialist agents are highlighted for you by default.

Role	Best For
Executive	Team captain, lead mentor, program manager
Fabricator	Students who build and machine parts
Integrator	Students who wire electronics and assemble subsystems
Programmer	Students who write Java code for the FTC SDK
Strategist	Students who scout, plan autonomous, and analyze game data

Step 5: Create Your FTC Project

Go to **Teams → [Your Team] → Projects tab** and click **New Project**. Enter a project name (e.g., “FTC INTO THE DEEP 2025–26”) and select **FTC** as the program type. This sets the Build Calendar to 18 weeks, uses FTC-specific event labels (Scrimmage, League Meet, League Tournament, State Championship), and configures all agents with FTC context.

Chapter 3: Talking to Commander: How to Ask Good Questions

The Anatomy of a Good Prompt

Commander works best when you give it three things: **context** (who you are), **the task** (what you need), and **constraints** (what limits you). A prompt that includes all three will always produce a better result than a vague question.

Component	Weak	Strong
Context	“Help us with our robot”	“We are a 6-student FTC team in our second season”
Task	“What should we build?”	“Generate a MoSCoW priority list for the INTO THE DEEP game”
Constraints	(none)	“Budget: $800. Tools: drill press, band saw, 3D printer. No CNC.”

Starter Prompts for FTC Teams

The following prompts are tested and effective for FTC teams at each stage of the season.

Kickoff Day:

> *“We are a 6-student FTC team in our second year. Our budget is $1,200. We have a drill press, band saw, and two 3D printers. Analyze the INTO THE DEEP game and generate a MoSCoW priority list for our build season.”*

After Scrimmage:

> *“We attended our scrimmage on October 11. Our intake mechanism jammed twice. We scored 42 points in teleop but zero in autonomous. What should we fix before League Meet 1 on November 15?”*

Between League Meets:

> *“We finished 4th at League Meet 1 with a score of 87. Our main weakness was slow sample delivery. What are three design changes we can make in the next 4 weeks before League Meet 2?”*

Before League Tournament:

> *“Our League Tournament is January 31. Generate a final pre-tournament checklist for our robot, our pit crew, and our drive coach.”*

What Commander Routes Automatically

When you ask Commander a question, it reads the intent and routes to the appropriate agents without you specifying which ones. Here are common FTC questions and the agents Commander activates:

Your Question	Agents Activated
“What are the autonomous scoring rules?”	Rulebook
“Design an intake for the sample game piece”	CAD-Bot, OSHA
“Write TeleOp code for our linear slide”	Ada
“Is our robot legal for inspection?”	Rulebook, OSHA
“How do we improve our autonomous score?”	Scout, Ada, Optic
“Write a grant letter for a local business”	Grants, Megaphone
“Log today’s build session”	Scribe

Chapter 4: The Kickoff Wizard: Your Season Starting Point

The Kickoff Wizard is the most important tool in PitCrew. It is the structured process that transforms a game reveal into a documented strategy, a robot definition, and a build plan — all in a single session. Every other tool in PitCrew works better after the Kickoff Wizard is complete, because Commander and all 17 agents automatically receive your game context.

The 9-Step Wizard

Navigate to **Kickoff Wizard** in the sidebar. If your game is in the Game Library, select it. Otherwise, upload your FTC Game Manual PDF. The wizard walks your team through nine steps.

Step 0 — Game Library: Select the current FTC game. The system pre-loads known game parameters, scoring objects, and field layout.

Step 1 — Game Notes: Fill in the scoring objects, autonomous tasks, teleop tasks, and endgame tasks. Rulebook assists with rule citations.

Step 2 — Strategy Framing: Describe your team’s strengths and constraints. Commander suggests three strategic directions.

Step 3 — Decision Matrix: Score each strategy across five criteria (scoring potential, build complexity, driver skill required, reliability, and uniqueness). Commander calculates a weighted score and recommends a direction.

Step 4 — MCR Definition: Define your Minimum Competitive Robot — the simplest version of your robot that can score enough points to advance at League Meets. This becomes the baseline for your MoSCoW Board.

Step 5 — Prototype Plan: Identify the two or three mechanisms that carry the most risk and need to be prototyped first. Set prototype due dates so they appear on the Build Calendar.

Step 6 — Constraint Capture: Document your team's budget, tool inventory, experience level, and meeting schedule. This context flows into every agent response for the rest of the season.

Step 7 — Review: Review the complete session. Export as Markdown for the Engineering Notebook.

Step 8 — Meeting Mode: A full-screen facilitation view designed to be projected on a screen during your Kickoff Day team meeting. Shows the current step, the game name, your strategy, and your MCR in large, readable text.

Step 9 — Commander Context Banner: A persistent banner visible in Commander that shows your game, strategy, MCR, and key constraints at a glance. Once the Kickoff Wizard is complete, every Commander session automatically includes this context.

After the Wizard

Once you complete the Kickoff Wizard, navigate to **MoSCoW Board** and click **Generate with Commander**. Commander uses your game notes, strategy, MCR, and constraints to produce a fully populated priority board in seconds. This is the starting point for your entire build season.

Chapter 5: The MoSCoW Priority Board

The MoSCoW Board (`/moscow`) is your team's shared priority list for the build season. Every robot feature, mechanism, and software task lives here, organized into four priority columns.

Column	Meaning for FTC Teams
Must Have	Required to meet your MCR and score at League Meets
Should Have	Improves your score but is not required to compete
Could Have	Nice to have if time and budget allow
Won't Have	Explicitly out of scope for this season

Generating the Board

After completing the Kickoff Wizard, click **Generate with Commander** on the MoSCoW Board. Commander produces 15–25 items across all four columns, each with a description, suggested assignee role, and a flag for whether it needs prototyping.

Managing Items

Each card on the board can be edited inline. Click any card to expand it and update the description, assignee, priority column, or approval status. Items flagged as needing prototyping show a purple **Proto** badge. Set a **Proto Due Date** on any prototype item to have it appear as a chip on the Build Calendar in the correct week.

The Approval Workflow

When Commander generates items, they start in **Draft** status. Your team Executive or lead mentor reviews each item and marks it **Approved** or **Rejected**. Only approved items flow into the CAD Board and Fabrication workflows. This prevents the team from building things that were never formally agreed upon.

Chapter 6: The Engineering Department Agents

Rulebook — The Rule Expert

Rulebook has read the entire FTC Game Manual. Ask it anything about scoring, field setup, robot inspection, or legal mechanisms. It always cites the specific rule number so you can verify the answer in the official manual.

> *"What is the maximum robot size at the start of a match? Cite the rule." "Can we use a custom 3D-printed intake? What are the material restrictions?" "What happens if our robot tips over during autonomous?"*

CAD-Bot — The Mechanical Designer

CAD-Bot produces mechanism concepts, assembly descriptions, and part recommendations for FTC-scale robots. It is familiar with GoBilda, REV Robotics, and AndyMark components and will recommend specific part numbers when relevant.

> *"Design a passive intake for 1.5-inch diameter game pieces using GoBilda components." "What is the best linear slide configuration for a 24-inch vertical extension using REV components?" "Generate a bill of materials for a 4-bar linkage arm mechanism."*

Ada — The Programmer

Ada writes Java code for the FTC SDK. It produces TeleOp OpModes, Autonomous OpModes, and subsystem classes. It is familiar with the REV Control Hub, REV Expansion Hub, and

common FTC sensors.

> *“Write a TeleOp OpMode for a mecanum drivetrain with field-centric control.” “Write an Autonomous OpMode that drives forward 24 inches, turns 90 degrees, and scores a sample.” “Write a subsystem class for a linear slide with position control using a REV Through-Bore Encoder.”*

Optic — The Vision Engineer

Optic configures vision pipelines for FTC. It is familiar with TensorFlow Lite object detection, AprilTag localization, and the FTC Vision Portal API.

> *“Write a vision pipeline that detects the team prop and determines its position (left, center, right).” “Configure AprilTag localization for our autonomous routine.”*

Volt — The Electrical Engineer

Volt produces wiring manifests, power budgets, and electrical compliance checks for FTC robots.

> *“Generate a wiring manifest for a robot with 4 drive motors, 2 arm motors, 1 intake motor, and 2 servos.” “What is the maximum current draw we can expect from our motor configuration?”*

Scout — The Strategy Analyst

Scout analyzes game scoring and produces strategic recommendations, autonomous path priorities, and alliance selection guidance.

> *“What is the highest expected autonomous score for a top-tier FTC team this season?” “We are ranked 6th at the League Tournament. Generate a pick list strategy for alliance selection.”*

Chapter 7: The Operations Department Agents

OSHA — The Safety Inspector

OSHA reviews robot designs and build processes for safety compliance. It checks for sharp edges, pinch points, pneumatic safety (not applicable in FTC), and general workshop safety.

> *“Review our intake design for pinch points and sharp edges.” “Generate a safety checklist for our build sessions.”*

Ledger — The Budget Tracker

Ledger tracks your team’s spending, forecasts remaining budget, and flags items that are over budget.

> *“We have spent $340 of our $800 budget. We still need to buy a linear slide kit ($85), two motors ($60), and a Control Hub ($250). Will we stay within budget?”*

Stress-Test — The Quality Engineer

Stress-Test generates test plans, pre-match checklists, and failure mode analyses.

> *“Generate a test plan for our linear slide mechanism before League Meet 1.” “Create a pre-match checklist for our pit crew.”*

Chapter 8: The Outreach and Awards Agents

Grants — The Fundraising Agent

Grants writes sponsorship letters and grant applications tailored to your team’s location and the local business community.

> *“Write a sponsorship letter for a local engineering firm. Our team number is 9876, we are based in Orlando, Florida, and we are looking for $500 in support.”*
>
> **Before using Grants for the first time:** Set your team’s location at **Teams → [Your Team] → Settings tab**.

Megaphone — The Community Outreach Agent

Megaphone plans and promotes outreach events, demo days, and school visits.

> *“Plan a robot demo at an elementary school for 30 students. We have 90 minutes and three team members available.”*

Legacy — The FIRST Impact Award Agent

Legacy helps document your team's community impact, writes award submissions, and tracks outreach metrics.

> *"We have done 12 outreach events this season reaching 340 students. Help us write the FIRST Impact Award essay."*

Spark — The Engineering Inspiration Award Agent

Spark helps document your team's engineering process and innovation for the Engineering Inspiration Award.

Aesthetics — The Industrial Design Award Agent

Aesthetics evaluates your robot's visual design, branding consistency, and presentation quality for the Industrial Design Award.

Chapter 9: The Documentation Agent: Scribe

Scribe automatically formats every Commander session into an Engineering Notebook entry. After each build session, team meeting, or design review, navigate to the **Scribe Notebook** (`/notebook`) to find a formatted entry ready for review.

Each entry includes a session title, date, participants, key decisions, action items, and a summary of the work completed. You can edit any entry before exporting.

Exporting entries: Click **Export .md** on any entry to download a Markdown file. For a print-ready version, use the full-screen expand button and click **Print** inside the modal.

> *"Log today's build session. We worked on the intake prototype for 2 hours. The first design jammed on the game piece. We iterated to a wider channel and it worked. Action item: CAD-Bot to redesign the final version by Friday."*

Chapter 10: The Human Resources Agent: Guide

Guide helps mentors onboard new students, assign roles, and create personalized learning plans.

> *"We have a new student joining the team. She has no robotics experience but is interested in*

> *programming. Create a 4-week onboarding plan for her."*
>
> *"Generate a role description for our new Drive Coach position."*

Chapter 11: The Build Calendar

The Build Calendar (`/build-calendar`) is your team's shared timeline for the entire FTC season. It shows an 18-week grid (adjustable) with three types of content in each week column.

Auto-derived chips appear automatically when you set due dates on other tools:

- **Blue CAD chips** — CAD Board requests with a `neededBy` date
- **Green Fab chips** — Fabrication tasks with a `dueDate`
- **Purple Proto chips** — MoSCoW prototype items with a `protoDueDate`

Manual tasks can be added to any week by clicking the **+** button in a week column. These are free-form tasks that do not come from another tool.

Season events appear as colored badges at the top of each week column, set in the Season Dates tab.

The Season Dates Tab

The Season Dates tab is where you configure your FTC season timeline. Set your **Kickoff Date** (typically the first Saturday of September) and your **total weeks** (default 18). Then add your competition events.

FTC event types available:

- **Scrimmage** — Robot does not need to be complete. Key mechanisms or a prototype are sufficient. Typically October.
- **League Meet** — Regular season competition. Florida schedule: Nov 15, Dec 13, Jan 17.
- **League Tournament** — Qualifying tournament. Florida: Orlando League Tournament, Jan 31.
- **State Championship** — Florida FTC State Championship, Mar 6–7.
- **Milestone** — Any internal team deadline (e.g., "Robot Drive-Ready", "Autonomous Working").

> **Florida teams:** Enter all six dates at the start of the season so the calendar shows your full competition schedule from day one.

The Prototype Work Row

Below the week grid, a purple **Prototype Work** section shows all MoSCoW items flagged for prototyping that do not yet have a `protoDueDate` set. Once you set a Proto Due Date on a card in the MoSCoW Board, that item moves from the Prototype Work row into the correct week column as a purple chip.

FTC Build Phase Labels

The Build Calendar uses four phase labels for FTC projects, based on the 18-week season:

Weeks	Phase	What Should Be Happening
1–4	**Prototype**	Validate mechanisms before committing to a full build
5–9	**Core Robot**	Build the competition robot; goal is drive-ready by Week 9
10–14	**Iteration**	Compete at League Meets and improve between events
15+	**Polish & Prep**	Final refinements, award submissions, League Tournament and State Championship

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Chapter 12: The Project Lifecycle Checklist

The Lifecycle Checklist (`/lifecycle`) is a real-time guide from project creation to competition day. It shows six collapsible phases, each with checklist items that auto-check based on actual project data.

Phase	What Gets Auto-Checked
1 — Kickoff & Strategy	Kickoff Wizard session exists, game notes filled, strategy selected, MCR defined
2 — Planning & Prioritization	MoSCoW Board generated, prototype targets flagged, CAD requests created
3 — Build Season	Fabrication tasks created, cut list items added, build calendar tasks exist
4 — Integration & Testing	CAD items in review or approved, fabrication tasks completed, notebook entries created
5 — Competition Prep	League Meet or League Tournament dates added to Season Dates
6 — Post-Competition Review	Notebook entries with “review”, “debrief”, or “lessons” in the title

Each item includes a **Go →** link that navigates directly to the relevant tool. An overall progress bar at the top shows the percentage of phases complete. Use this page at the start of each week to see where the team stands and what is still missing.

Chapter 13: The Agent Roster: Live Activity View

The Agent Roster page (`/agents`) provides a real-time view of all 17 agents during an active Commander session.

State	Visual	Meaning
Idle	Dimmed card	Agent not involved in the current session
Active	Pulsing ring + spinner	Agent is currently processing
Done	Green checkmark + output preview	Agent has completed its task
Skipped	Faded card	Agent was not needed for this query

A session progress bar at the top shows the session title, an X/N agent counter, and a **View** button that jumps directly to that Commander session. The Roster is most useful during Kickoff Day — project it on a shared screen so the whole team can watch the AI pipeline in real time.

Chapter 14: FTC Season Workflows — Week by Week

The FTC Season at a Glance

FTC runs from September Kickoff through State Championship and World Championship — approximately 18–20 calendar weeks. There is **no Robot Freeze**. Unlike FRC, you can modify your robot all the way through the season. This means every League Meet is both a competition and a design review. The goal is a continuously improving robot, not a single perfect one.

Month	What's Happening
September	Game Kickoff — strategy, prototyping begins
October	Scrimmage — prototype robot OK, key elements only
November	League Meet 1 — first competitive robot
December	League Meet 2 — iterate and improve
January	League Meet 3 + League Tournament — qualify for State
February–March	State Championship — top teams advance to Worlds

Pre-Season (August – September)

During the weeks before Kickoff, your team focuses on fundraising, outreach, and preparation.

Use **Guide** to onboard new students and assign roles. Use **Grants** to draft sponsorship letters to local businesses — set your team location first at **Teams → Settings**. Use **Megaphone** to plan fall outreach events. Use **Ledger** to set a season budget before any parts are ordered.

Recommended pre-season Commander prompt:

> *"We are a second-year FTC team with 8 students and two sponsors. Help us create a 6-week fundraising plan to raise $2,000 before Kickoff."*

Kickoff Day (First Saturday of September)

Kickoff Day is the most important day of the FTC season. The game is revealed, and your team begins an 18-week journey to State Championship. Unlike FRC, you have time to iterate — but the teams that plan well on Kickoff Day are the ones that arrive at League Meet 1 with a competitive robot.

The FTC Kickoff Day workflow:

1. Watch the game reveal video as a team.
2. Open PitCrew and navigate to **Kickoff Wizard**.
3. Select the current FTC game from the Game Library (or upload the manual PDF).
4. Work through Steps 1–5: game notes, strategy framing, Decision Matrix, MCR definition, and Prototype Plan.
5. Use **Meeting Mode** to project the session on a screen for the team discussion.
6. Lock in your strategy and MCR.
7. Navigate to **MoSCoW Board** and click **Generate with Commander** to produce the priority board.
8. Review and approve the board as a team.
9. Navigate to **Build Calendar → Season Dates** and set your Kickoff Date to the first Saturday of September. Set total weeks to 18.
10. Add all six Florida competition dates: Scrimmage (Oct 11), League Meet 1 (Nov 15), League Meet 2 (Dec 13), League Meet 3 (Jan 17), Orlando League Tournament (Jan 31), Florida State Championship (Mar 6–7).

Weeks 1–4: Prototype Phase

The goal of this phase is to validate your strategy before committing to a full build. The October Scrimmage does not require a complete robot — key mechanisms or a prototype are sufficient. Use this phase to learn what works and what does not.

What to do in PitCrew:

Use **CAD-Bot** to generate mechanism concepts for your top two Must Have items. Build physical prototypes based on those concepts. Test them against the game piece. If a mechanism fails, ask CAD-Bot for an alternative design. Set **Proto Due Dates** on your MoSCoW Board prototype items so they appear as purple chips on the Build Calendar.

Use **Rulebook** to verify that your prototype designs are legal. Ask it to cite the specific inspection rules for any mechanism you are unsure about.

Use **Ada** to write a basic TeleOp OpMode for your drivetrain so you can drive the robot at the Scrimmage even if the mechanisms are not complete.

Scrimmage (typically Week 6, ~Oct 11 in Florida):

Bring your best prototype. The Scrimmage is not a scored competition — it is a practice event. Observe other teams' approaches. Note which scoring actions they are prioritizing. After the Scrimmage, ask Commander:

> *"We attended the Scrimmage. Our intake worked but was slow. We saw three teams using a different approach. What should we change before League Meet 1?"*

Weeks 5–9: Core Robot Phase

The goal of this phase is a competitive, functional robot by League Meet 1 (Week 10–11, ~Nov 15 in Florida). This is the most intense build phase of the FTC season.

What to do in PitCrew:

Use **CAD-Bot** to finalize mechanism designs based on prototype results. Use **Volt** to generate a wiring manifest for the Control Hub. Use **Ada** to write subsystem classes for each mechanism and integrate them into a unified TeleOp OpMode. Use **Stress-Test** to generate a validation protocol for each subsystem before League Meet 1.

Set `dueDate` values on all fabrication tasks so they appear as green chips on the Build Calendar. Set `neededBy` dates on CAD requests so they appear as blue chips.

Use **Scribe** to log every build session. The Engineering Notebook is evaluated at League Meets — teams that document consistently score better in judging.

Recommended prompt for Week 7:

> *"We are in Week 7 of our FTC build season. Our intake is built and tested. Our linear slide is 60% complete. League Meet 1 is in 3 weeks. What should we prioritize this week?"*

Weeks 10–14: Iteration Phase — League Meets

This is the phase that separates FTC from FRC. You compete at League Meets and then come back to the shop and improve the robot before the next event. The teams that iterate fastest win.

After each League Meet, ask Commander:

> *"We finished [rank] at League Meet [N] with a score of [X]. Our main weakness was [Y]. What are the top three changes we should make before the next meet?"*

Use **Ada** to update code based on driver feedback. Use **CAD-Bot** to redesign mechanisms that underperformed. Use **Optic** to improve your autonomous vision pipeline. Use **Scribe** to document every iteration — judges want to see that your team learns from each competition.

Florida League Meet schedule:

- League Meet 1: November 15
- League Meet 2: December 13
- League Meet 3: January 17

Weeks 15–18: Polish & Prep Phase — League Tournament and State Championship

Florida schedule: Orlando League Tournament (Jan 31), Florida State Championship (Mar 6–7).

The goal of this phase is not to redesign the robot — it is to make the robot you have as reliable and consistent as possible.

Use **Stress-Test** to generate a final pre-tournament checklist. Use **Scout** to produce a strategy brief for the League Tournament and State Championship, including alliance selection guidance. Use **Legacy** and **Spark** to finalize award submissions. Use **Scribe** to compile the Engineering Notebook for judging.

Recommended prompt for Week 16:

> *"Our League Tournament is in 2 weeks. Generate a final pre-tournament checklist for our robot, our pit crew, and our drive coach. Include battery management, connector checks, and backup plan for our intake."*

Chapter 15: Competition Day Playbook

The Pit Crew Routine

Before every match, run the Stress-Test pre-match checklist. The checklist covers:

1. Battery voltage above 13V.
2. All motor connections secure and responding.
3. All servo positions initialized correctly.
4. Control Hub and Expansion Hub (if used) showing green status lights.

5. Camera connection showing a live feed.
6. Controller binding test — all buttons responding correctly.
7. Robot fits within the 18-inch starting cube.

Never skip the checklist. The most common reason robots fail at competition is a loose connector or a dead battery that was not checked.

The Drive Coach Routine

Before each match, the Drive Coach should review Scout's pre-match strategy brief. The brief covers your alliance's combined strengths, your opponents' known weaknesses, the recommended autonomous path, and the recommended teleop priority.

The Pit Scouting Routine

During the first practice match session, send a student to pit-scout every team in your division. Ask three questions: *"What is your drivetrain?"*, *"What can you do in autonomous?"*, and *"What is your most reliable scoring action?"* Enter the notes into Commander to build a scouting database.

Recommended scouting prompt:

> *"Here are my scouting notes from 12 teams at the League Tournament: [paste notes]. Rank them by alliance value and suggest our top 3 picks for alliance selection."*

Between Matches

> *"Team 12345 just beat us by using a defense strategy we didn't expect. How do we counter it in our next match?"*

Alliance Selection

> *"Based on our scouting data, we are the 3rd alliance captain. Generate a ranked pick list of the top 8 available teams for our first and second picks, prioritizing autonomous reliability and endgame capability."*

Chapter 16: Mentor Guide — Administration and Export

Onboarding New Students

1. Go to **Teams → [Your Team] → Invite tab**.
2. Click **Generate Invite Link**. The link is valid for 7 days.
3. Share the link with the student via group chat, email, or Discord.
4. The student opens the link, signs in, and clicks **Join Team**.
5. The student selects their role on the **Profile** page.

As a team owner or Executive, you can verify and reassign any member's role at any time from **Team Detail → Members tab**. Click the role badge next to any member's name to open a dropdown with all five role options.

Setting Team Location

For the Grants and Megaphone agents to provide location-specific responses, set your team's location:

1. Go to **Teams → [Your Team] → Settings tab**.
2. Enter your **City**, **State/Province**, and **Country**.
3. Click **Save Location**.

Florida teams should enter "Orlando, Florida, United States" or their specific city. Grants will then reference local businesses and foundations; Megaphone will suggest local schools and community centers.

Creating a Project

Each team can have multiple projects — one per season, or one per program if you run both FRC and FTC. To create an FTC project:

1. Go to **Teams → [Your Team] → Projects tab**.
2. Click **New Project**.
3. Enter a project name (e.g., "FTC INTO THE DEEP 2025–26").
4. Select **FTC** as the program type.
5. Click **Create**.

The FTC program type sets the Build Calendar to 18 weeks, uses FTC-specific event labels, and configures all agents with FTC context.

Exporting the Engineering Notebook

Any team member can export any Scribe notebook entry as a `.md` Markdown file by clicking **Export .md** on the Notebook page. For a clean print-ready version, use the **full-screen expand** button on any entry, then click **Print** inside the modal.

Exporting the MoSCoW Board

Any team member can export the current MoSCoW board by clicking **Export .md** in the board header. The export includes all items, their priority column, their description, and their approval status.

Exporting the Kickoff Wizard Session

After completing the Kickoff Wizard, click **Export .md** on the Review step to download the full session as a Markdown file — including game notes, strategy, MCR, and prototype plan — ready for the Engineering Notebook.

Chapter 17: Frequently Asked Questions

Q: Can I ask Commander questions that are not about robotics? Commander is a general-purpose AI orchestrator. However, the specialist agents are optimized for FTC contexts. For general questions, Commander will respond directly without activating the specialist agents.

Q: What if Commander gives me wrong information? Always verify critical information — especially rule citations — against the official FTC Game Manual. Rulebook always cites the rule number so you can check the source directly.

Q: Can multiple students use Commander at the same time? Yes. Each student has their own account and their own session history. Multiple students can be in Commander simultaneously without interfering with each other.

Q: Does Commander remember previous sessions? Within a single session, Commander has full context of the conversation. Across sessions, Commander does not automatically remember previous conversations. However, the Kickoff Wizard context (game, strategy, MCR, constraints) is automatically injected into every new session for the active project.

Q: What is the difference between a Team and a Project? A Team represents your FTC team (e.g., Team 9876). A Project represents a single season or program within that team (e.g., “FTC INTO THE DEEP 2025–26”). One team can have multiple projects — for example, if your

organization runs both an FTC team and an FRC team, each gets its own project with the correct program type.

Q: Can we use PitCrew for both FRC and FTC? Yes. Create a separate project for each program and select the correct program type (FRC or FTC) when creating the project. The Build Calendar, season event labels, and agent context all adapt automatically.

Q: What happens if we miss a League Meet? Nothing in PitCrew changes automatically. Update your Season Dates tab to reflect any schedule changes. The Build Calendar will adjust the phase labels accordingly.

Q: How do we handle the Engineering Notebook for judging? Scribe automatically formats every Commander session into a notebook entry. Review and edit each entry after your build sessions, then export as Markdown or print directly from the full-screen view. Judges at League Meets evaluate the notebook — consistent documentation throughout the season is more valuable than a last-minute compilation.

Chapter 18: Quick Reference Card

Task	Where to Go	What to Ask
Start the season	Kickoff Wizard	Upload game manual, complete all 9 steps
Generate priority list	MoSCoW Board	“Generate with Commander” button
Ask a rules question	Commander	“What does rule G301 say about…”
Design a mechanism	Commander	“Design an intake for [game piece] using GoBilda parts”
Write TeleOp code	Commander	“Write a TeleOp OpMode for a mecanum drivetrain”
Check robot legality	Commander	“Is our [mechanism] legal for FTC inspection?”
Log a build session	Commander → Scribe	“Log today’s build session: [summary]”
Track the budget	Commander → Ledger	“We have $340 left. We need to buy [parts]. Will we stay in budget?”
Plan a fundraiser	Commander → Grants	“Write a sponsorship letter for [local business]”
Prepare for a League Meet	Commander → Stress-Test	“Generate a pre-match checklist for League Meet [N]”
Scout an opponent	Commander → Scout	“Analyze Team [XXXX]’s performance data”
Write an award essay	Commander → Legacy	“Help us write the FIRST Impact Award essay”
View the season timeline	Build Calendar	Set kickoff date and add all competition dates in Season Dates tab

Task	Where to Go	What to Ask
Check season progress	Lifecycle Checklist	Review all 6 phases and click Go → links for incomplete items
Watch agents work	Agent Roster	Project on a shared screen during Kickoff Day
Export the notebook	Scribe Notebook	Click Export .md on any entry
Invite a new student	Teams → Invite tab	Generate Invite Link (valid 7 days)