TEKSense

6-DIVISION SMALL BUSINESS MODEL

Team 21309
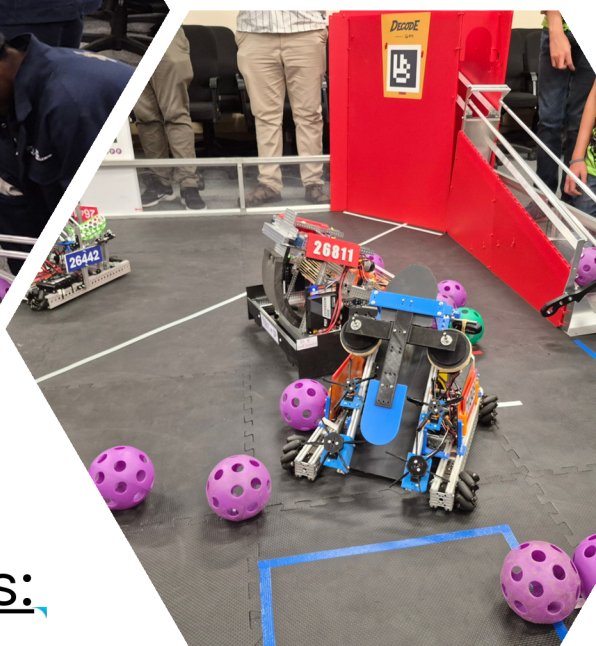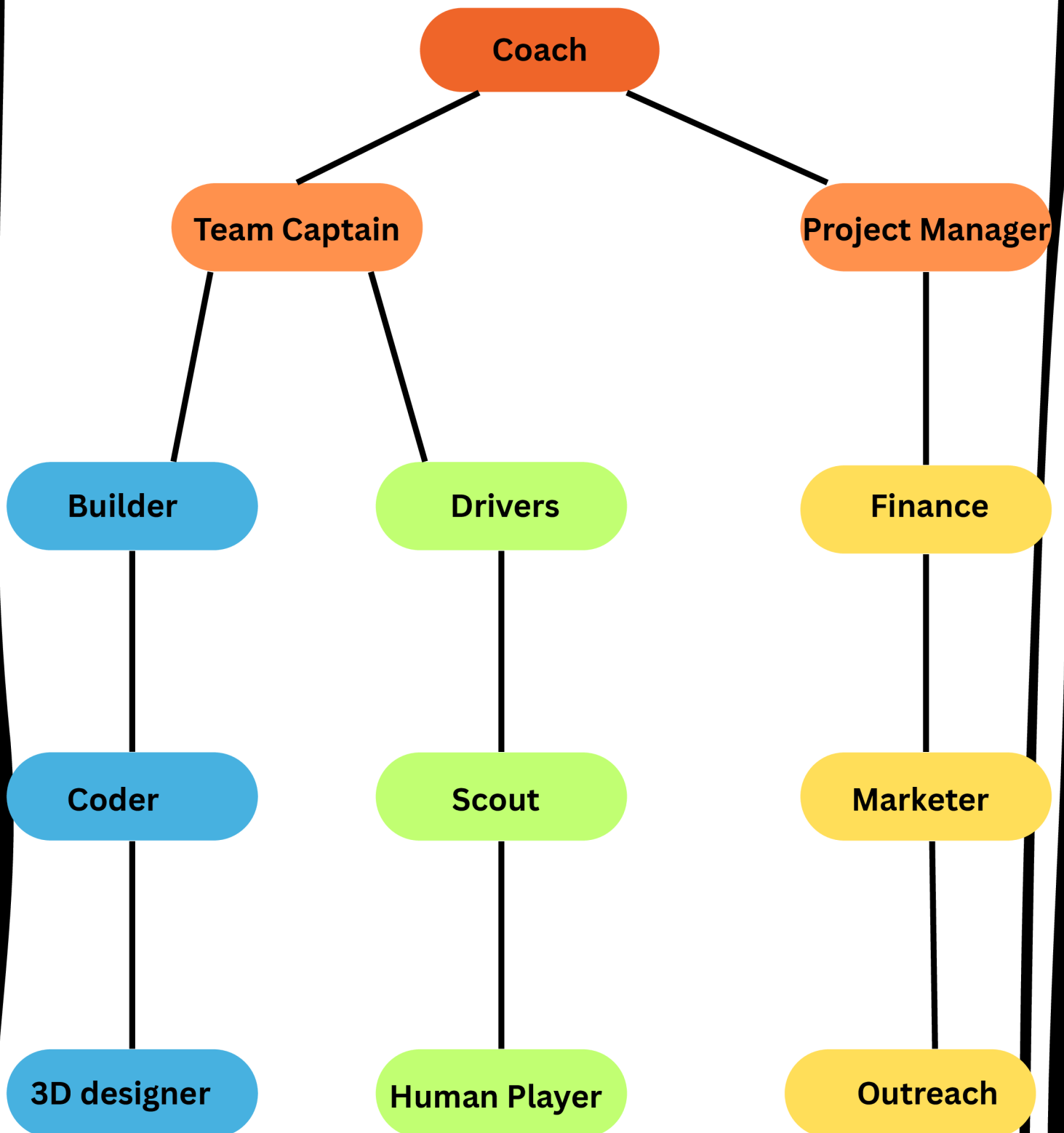
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@TEKSENSE_FTC

FIRST
TECH
CHALLENGE

Team structure

Coach

Team Captain

Project Manager

Builder

Drivers

Finance

Coder

Scout

Marketer

3D designer

Human Player

Outreach

PRODUCT DESIGN & ENGINEERING DIVISION
(Designers + Builders)

🟢 *"Manufacturing & Robot &c Design Department."*

Purpose
Turn ideas into a functional, reliable robot.

Key Skills
- Engineering design process
- CAD & technical sketching
- Mechanical systems (drivetrain, manipulators, mechanisms)
- Prototyping and iteration
- Material selection & trade-offs

Responsibilities
- Brainstorm robot concepts
- Design subsystems
- Build, test, break, and improve
- Document design decisions

Outputs
- CAD models / sketches
- Prototypes
- Engineering notebook entries
- Final robot hardware
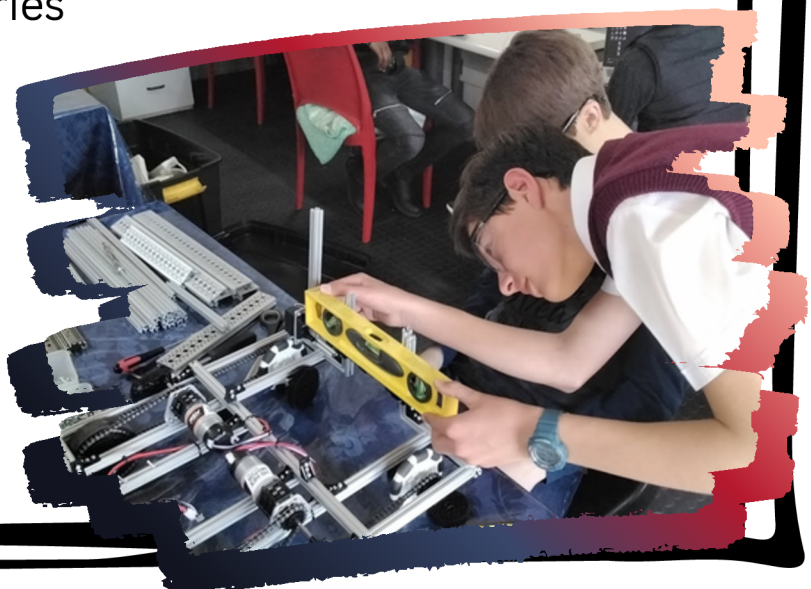
PRODUCT DESIGN & ENGINEERING DIVISION
(Designers + Builders)

🔧 Mechanical Lead

Purpose: Oversees the physical design and build of the robot.
- Leads design brainstorming and trade-off decisions
- Guides prototyping and iteration
- Coordinates with Software for integration
- Ensures build quality and reliability

Skills Developed: Engineering design process, leadership, problem-solving

🧩 CAD & Design Specialist

Purpose: Translates ideas into visual and technical designs.
- Creates CAD models or detailed sketches
- Updates designs based on testing feedback
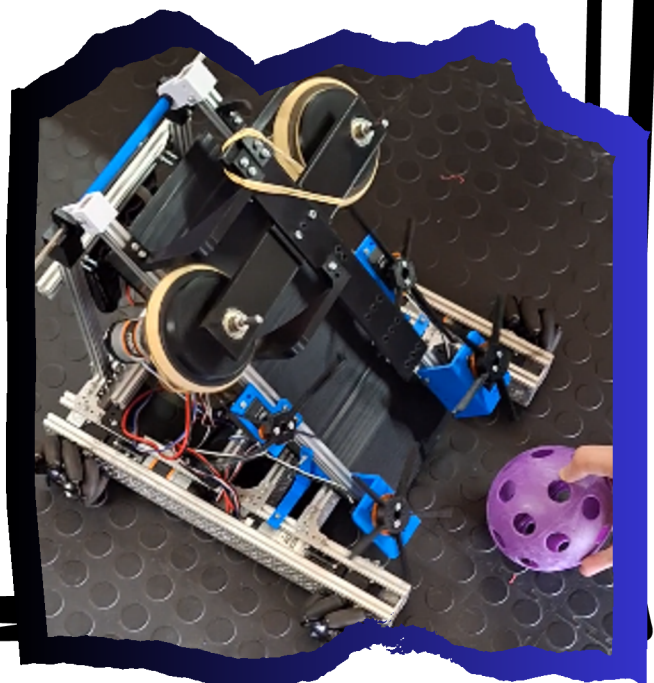- Documents design changes and reasons

Skills Developed: CAD, spatial reasoning, technical communication

🛠️ Build & Assembly Technician

Purpose: Turns designs into physical reality.
Assembles robot subsystems
Tests mechanisms and reports issues
Maintains tools and parts inventory

Skills Developed: Precision building, troubleshooting, teamwork

SOFTWARE DEVELOPMENT & AUTOMATION DIVISION

(Coders + Control Specialists)

● "Software & Systems Engineering Team."

Purpose
Make the robot think, respond, and perform consistently.

Key Skills
- Programming logic & structure
- Sensor integration
- Autonomous strategy
- TeleOp optimisation
- Debugging and optimisation

Responsibilities
- Write modular, readable code
- Develop autonomous routines
- Tune motors, sensors, and controls
- Collaborate with builders during testing

Outputs
- Version-controlled code
- Autonomous performance data
- Debug logs and improvements
- Strategy documentation
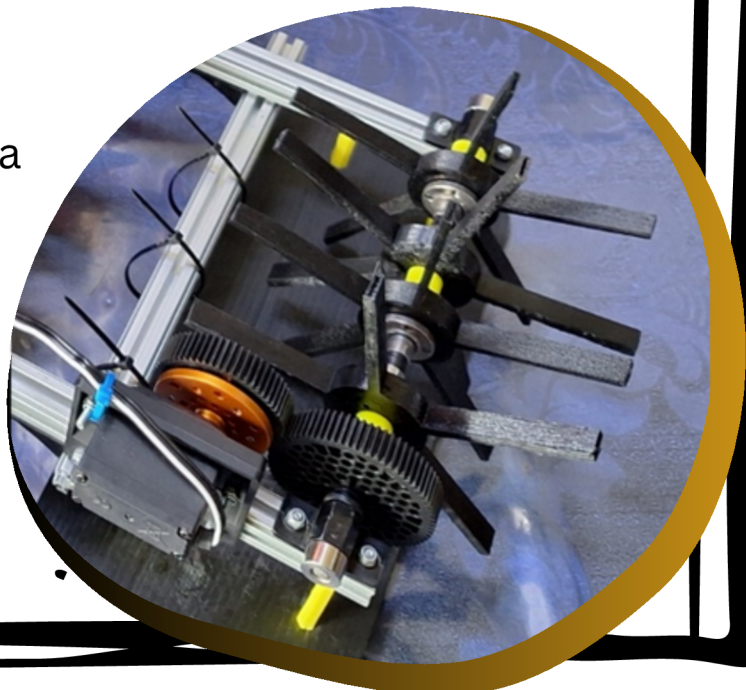
SOFTWARE DEVELOPMENT & AUTOMATION DIVISION

(Coders + Control Specialists)

💻 Programming Lead

Purpose: Owns the robot's overall code structure and logic.
- Designs modular, readable code
- Oversees Autonomous and TeleOp strategy
- Coordinates testing with builders

Skills Developed: Advanced coding, systems thinking, leadership

🤖 Autonomous Developer

Purpose: Focuses on reliable autonomous routines.
- Programs and tests autonomous paths
- Tunes sensors and motion control
- Analyses performance data

Skills Developed: Algorithmic thinking, optimisation, debugging

🎮 Driver Control & Tuning Specialist

Purpose: Optimises robot performance during TeleOp.
- Refines driver controls
- Tunes motors and responsiveness
- Works closely with drivers

Skills Developed: Human–robot interaction, testing, iteration

OPERATIONS & PROJECT MANAGEMENT DIVISION

(Team Leadership + Workflow Control)

● "Operations & Management Office."

Purpose
Ensure the team runs on time, on task, and together.

Key Skills
- Planning & scheduling
- Task delegation
- Risk management
- Conflict resolution
- Agile-style iteration

Responsibilities
- Create season timelines
- Coordinate between divisions
- Track progress and blockers
- Adjust plans when challenges arise

Outputs
- Project plans
- Meeting notes
- Risk & reflection logs
- Clear role structures
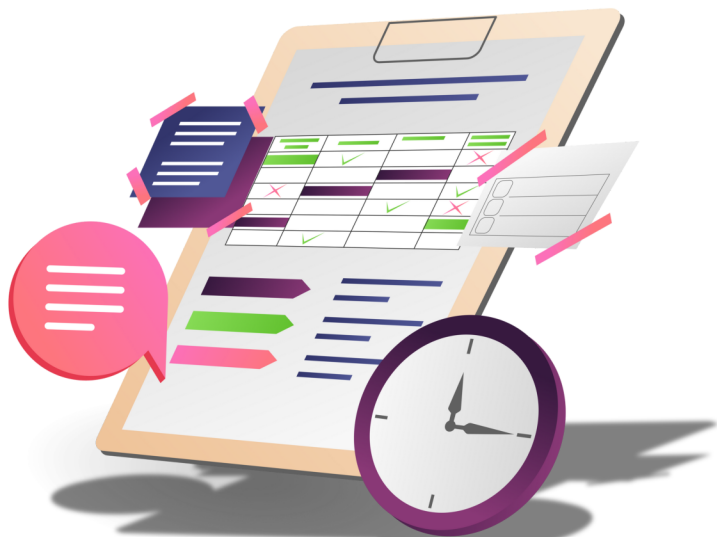
OPERATIONS & PROJECT MANAGEMENT DIVISION
(Leadership + Workflow)

📋 **Team Captain / Operations Lead**

Purpose: Keeps the team organised and student-led.
- Runs meetings and sets priorities
- Coordinates between divisions
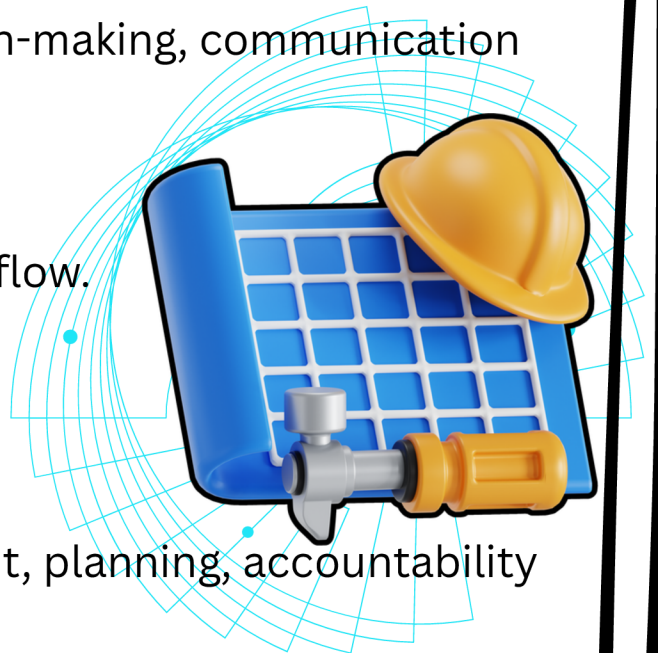- Represents the team to judges and mentors

Skills Developed: Leadership, decision-making, communication

⏱️ **Project Planner**

Purpose: Manages timelines and task flow.
- Creates season schedules
- Tracks task completion
- Identifies risks and bottlenecks

Skills Developed: Project management, planning, accountability

📝 **Documentation Coordinator**

Purpose: Ensures everything is recorded clearly.
- Oversees engineering notebook contributions
- Collects reflections and evidence
- Prepares materials for judging

Skills Developed: Organisation, technical writing, attention to detail

FINANCE, BUDGETING & SUSTAINABILITY DIVISION
(Money + Resources)

🟢 "Finance Department."

Purpose
Keep the team financially viable and sustainable.

Key Skills
- Budget planning
- Cost tracking
- Resource optimisation
- Fundraising strategy
- Sponsor relationship management

Responsibilities
- Create and manage the season budget
- Track expenses and income
- Plan fundraising activities
- Prepare sponsor reports

Outputs
- Budget spreadsheets
- Financial summaries
- Sponsorship records
- Sustainability plans

FINANCE, BUDGETING & SUSTAINABILITY DIVISION

(Money + Resources)

💰 **Finance Lead**

Purpose: Manages the team's financial health.
- Creates and tracks the budget
- Records expenses and income
- Advises on cost-effective decisions

Skills Developed: Financial literacy, responsibility, planning

🤝 **Sponsorship & Fundraising Coordinator**

Purpose: Secures resources for the team.
- Prepares sponsorship proposals
- Communicates with sponsors
- Plans fundraising activities

Skills Developed: Professional communication, negotiation, marketing

MARKETING, MEDIA & BRANDING DIVISION

(Storytelling + Public Image)

● "Marketing & Communications Team."

Purpose
Communicate the team's value, identity, and impact.

Key Skills
- Visual branding
- Content creation
- Public speaking
- Social media strategy
- Professional presentation

Responsibilities
- Develop team brand
- Create pit displays and media
- Manage online presence
- Prepare judge-facing materials

Outputs
- Logo & brand assets
- Videos & posts
- Pit design
- Pitch scripts

MARKETING, MEDIA & BRANDING DIVISION

(Storytelling + Public Image)

🎨 Branding & Design Lead

Purpose: Creates a strong, consistent team identity.
- Designs logos, colours, and visuals
- Ensures brand consistency
- Supports pit and presentation design

Skills Developed: Visual communication, creativity, branding

📸 Media & Content Creator

Purpose: Documents and shares the team's journey.
- Creates photos, videos, and posts
- Manages social media content
- Supports award submissions

Skills Developed: Digital media, storytelling, marketing

🗣️ Presentation & Pitch Specialist

Purpose: Prepares the team for judge interactions.
- Develops clear pitch scripts
- Trains team members for interviews
- Ensures confident, professional delivery

Skills Developed: Public speaking, persuasion, clarity

OUTREACH, IMPACT & ETHICS DIVISION
(Community + Culture)

🟢 "Social Impact & Ethics Division."

Purpose
Ensure the team creates real-world impact while living FTC values.

Key Skills
- Community engagement
- Educational planning
- Mentorship
- Ethical leadership
- Gracious Professionalism®

Responsibilities
- Plan outreach activities
- Mentor other teams
- Run workshops and demos
- Reflect on impact and improvement

Outputs
- Outreach logs
- Impact metrics
- Reflection reports
- Partnerships
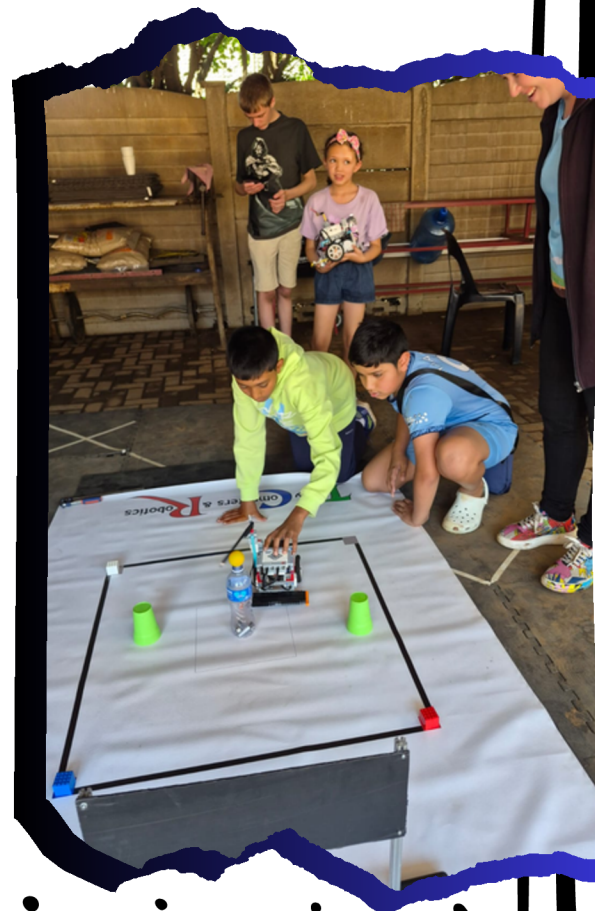
OUTREACH, IMPACT & ETHICS DIVISION
(Community + Culture)

🌍 **Outreach Lead**

Purpose: Plans and manages community engagement.
- Organises workshops and demos
- Coordinates school and community visits
- Tracks outreach impact

Skills Developed: Planning, community leadership, empathy

🧠 **Education & Mentorship Coordinator**

Purpose: Shares knowledge beyond the team.
- Mentors younger teams or students
- Designs simple learning activities
- Encourages STEM participation

Skills Developed: Teaching, leadership, responsibility

⭐ **Ethics & Team Culture Champion**

Purpose: Protects FTC values and team wellbeing.
- Promotes Gracious Professionalism®
- Supports inclusion and respect
- Helps resolve conflicts constructively

Skills Developed: Ethics, emotional intelligence, leadership

Developed by

FTC New Team Member – Application Form
This form is for learners applying to join the FTC team. It helps us understand your interests, skills, and vision for the future of robotics.

SECTION 1: LEARNER INFORMATION

Name & Surname: _____

School: _____Grade: _____

Email: _____ Cell nr: _____

SECTION 2: PARENT / GUARDIAN INFORMATION

Parent / Guardian Name: _____

Email Address: _____

Cell Phone Number: _____

SECTION 3: BUSINESS & TEAM SKILL PREFERENCES

Please rank the following skill areas from 1 to 6, where: 1 = Most interested; 6 = Least interested
Write a number next to each option. Each number may only be used once.

□ Product Design & Engineering (Designing & Building Robots)   Preference: ____

□ Software Development & Automation (Coding & Sensors)   Preference: ____

□ Operations & Project Management (Planning & Team Coordination)   Preference: ____

□ Finance, Budgeting & Sustainability   Preference: ____

□ Marketing, Media & Branding   Preference: ____

□ Outreach, Impact & Ethics   Preference: ____

SECTION 4: LEARNER STATEMENT (One Page)

Please write approximately one page answering the questions below. You may write neatly by hand or attach a typed page.

   Why do you want to join the FTC team?

   What skills or strengths do you already have that could benefit the team?
(These may be technical, creative, organisational, leadership, or communication skills.)

   What is your vision for robotics and technology development over the next 5 years?
(How do you think robotics will change education, society, or careers?)

SECTION 5: LEARNER DECLARATION

- I understand that FTC is a team-based, learner-led programme and that participation requires commitment, respect, and responsibility.
- I understand that there is a fee per term to pay.
- I understand that if I have other extra-mural sport, it may interfere with my application.

Learner Signature: _____ Date: _____

Parent Signature: _____ Date: _____

Email this form and attachments to
tek21309@gmail.com

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