



The 5th Dimension

EARENDEL PROTRACK

Functionality

Five Main Stages

1. Select the stellar object from the app/ web interface.
2. The requested object is updated in the user's database entry.
3. The telescope mount identifies a change in the current stellar object that is being observed, fetches its coordinates from the online database, and calculates the local coordinates.
4. The telescope will be turned towards the new object, without leveling or user interaction.
5. The mount maintains the track continuously.



Functionality

Main features

1. No leveling.
2. No reference is needed for the North.
3. No mathematics is involved.
4. Continuous tracking of the stellar object.



Functionality

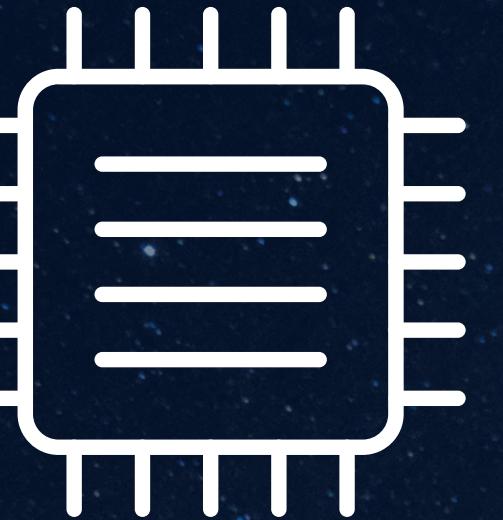
Mechanical Design

- Two main rotational degrees of freedom.
- Metal design for increased strength and robustness.
- Stepper motors with gear systems for increased resolution and precision.
- Adjustable mechanism to host any kind of telescope.
- Easy integration with existing tripods.



IOT Integration

1. Microcontroller
2. WiFi
3. Cloud database
4. App/ Web interface
5. Other additional features





Microcontroller

- ESP32 - Dual core microcontroller
 - Core 1 - Synchronous operations
 - Core 2 - Wireless communication

Wi-Fi

- The wireless connectivity through Wi-Fi enables communication between the telescope mount and the mobile app through a cloud database.

Database Integration

- Online database to store coordinates of stars and planets.
- Enables dynamic updates.
- Ensures the users to have the latest data.

App / Web Interface

- Seamless interface for the user for selecting and tracking celestial objects.
- The app / web interface communicates to the telescope mount, guiding it to the desired location.

Other

- GPS location of the mobile device.
- Magnetometer to identify North.
- Ensures precise movement and positioning of the telescope mount.



Interconnection Overview

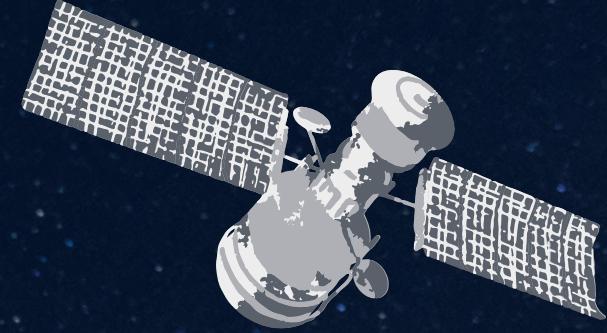
- The microcontroller is the central hub, orchestrating communication between the telescope mount, databases, and the mobile app.
- WiFi facilitates data exchange, while the database integration ensures up-to-date information for accurate celestial tracking.



Scalability and Flexibility

- Can be used with any typical small-scale telescopes.
- Adjustable method to connect the telescope.
- Compatible with any existing tripods.

Market Analysis



- The astronomy products market is thriving, driven by a growing fascination with the cosmos.
- Surveys also indicate a steady increase in stargazing and amateur astronomy activities globally.

Our Target Market Encompasses:

1. Astro-enthusiasts
2. Academia
3. Astro-research organizations
4. Scope enthusiasts seeking upgrades.

Competitor Analysis

- Traditional telescope mounts are common, but IoT integration is new.
- Explore emerging competitors for automated mounts.
- Assess features, pricing, distribution, and customer feedback for insights.

Trends and Opportunities

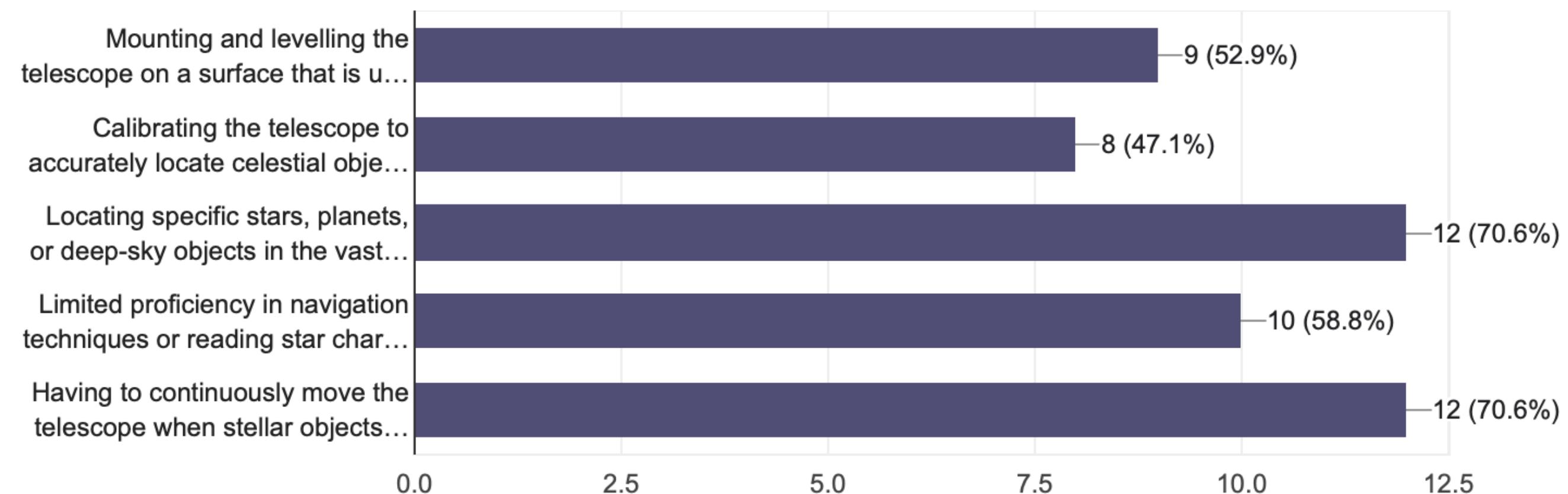
- The IoT revolutionizes stargazing for enthusiasts and education.
- Demand grows for user-friendly astronomy tech.
- Using social media and online platforms expands audience reach and product awareness.

Tell us about your current and past experience with telescopes.

What are the challenges you face when using telescopes?

 Copy

17 responses



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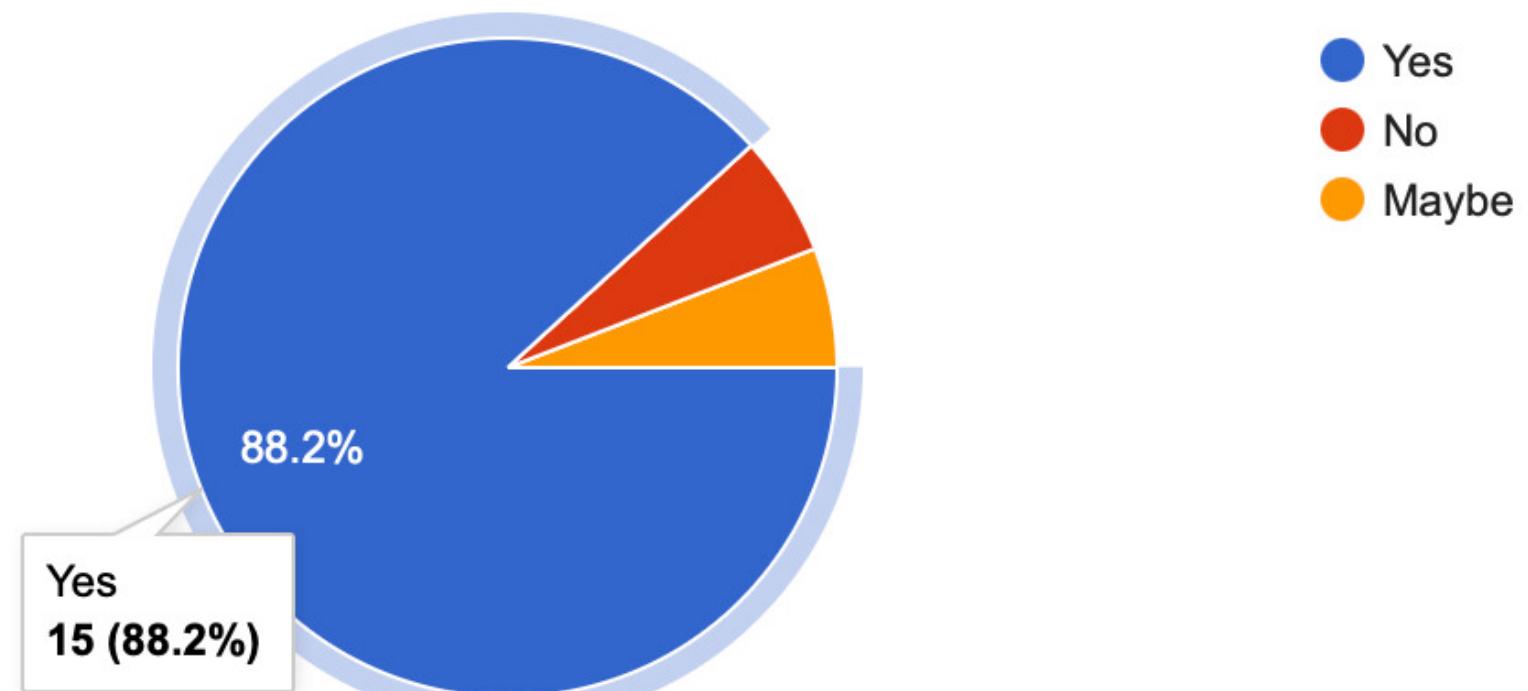
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Our Solution

Would you prefer a telescope mount system that offers remote control via a smartphone application, allowing users to conveniently select stars or planets for observation with minimal manual intervention?

 Copy

17 responses



Business Plan

- Planning to collaborate with engineers, astronomers, and IoT specialists to ensure our product meets industry standards and delivers user-friendly features.
- **Highlighted key features of the IoT-based mount:**
 - Automatic alignment and tracking of celestial objects.
 - Compatibility
 - User-friendly mobile application
 - Precise rotation and leveling capabilities
- **Marketing & Sales Strategy:**
 - Showcase the product at astronomy events, trade shows, and exhibitions.
 - Partner with astronomy clubs, schools, and online communities to broaden product reach.
 - Create informative content, tutorials, and demos highlighting product benefits.



What are the features you would expect from a such telescope mount?
(e.g.: ease of use, easy connectivity to the app, etc.)

7 responses

Efficient focusing of astronomical objects with minimal time investment

Easy connectivity and usability

Ease of use and easy connectivity to the app

Relative position memorizing of observed object to switch among them quickly

Ease of use

Automatic object locating and tracking, Large database of space objects observable based on telescope location

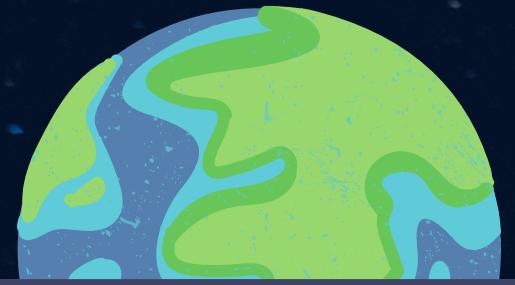
ease of use, ability to record and store, ability to control remotely, ability follow object automatically

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SWOT Analysis



STRENGTHS

- User-friendly with auto leveling and rotation.
- Integrated mobile app for easy control.
- Standout IoT technology differentiates from traditional mounts.

WEAKNESSES

- IoT may raise product costs.
- Potential connectivity issues.

OPPURTUNITIES

- Growing astronomy interest boosts product demand.
- Partnering with clubs or institutions extends reach and credibility.

THREATS

- Competitors may offer similar or advanced products.
- Meeting IoT and astronomy equipment standards could be challenging.



FMEA Analysis



Failures

- Breakdown or wear of mechanical components such as gears, motors, or bearings.
- Rotation Errors
- IOT connectivity failure

Effect Analysis

- Inaccurate celestial object tracking.
- Potential missed events and frustration.
- Misalignment issues impair observation.
- Loss of remote control functionality.

Viability & Risk Assessment

Market Viability

- Upward astronomy market trends.
- Rising interest across individuals, schools, and institutions.
- Future potential for a broader consumer base.

Product Viability

- Unique IoT-enabled telescope mounts.
- Enhancing appeal through telescope compatibility.
- Convenient mobile app for user ease.



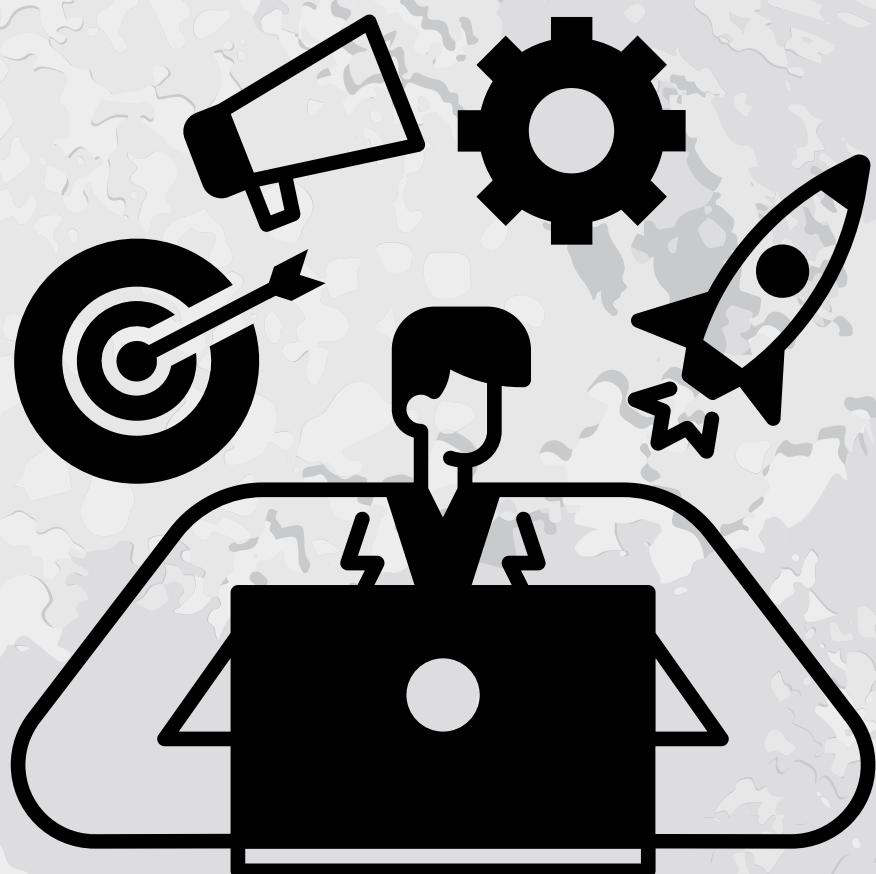
Financial Viability

- Initial investment in R&D and production may be required.
- Pricing strategy should be competitive yet profitable.
- Revenue growth opportunities via upgrades, accessories, partnerships.

Risk Assessment

- Compatibility issues with telescopes.
- Market trend shifts or declining astronomy interest.
- Economic downturn affecting non-essential spending.
- Safety standard compliance challenges.
- Slow market adoption impacting revenue.

Mitigation Strategies



Partner with telescope manufacturers for compatibility assurance.

Adapt product to changing market trends.

Stay compliant with regulations and certifications.

Enhance customer support processes.
Refine marketing strategies through market research.

Execution Plan



SOFTWARE PROGRESS

- Mobile App: Completed, providing a user-friendly interface.
- Database Integration: Successfully integrated, allowing real-time updates.



HARDWARE DESIGN

- Component Selection: Completed, ensuring optimal performance.
- Mechanical Design: In progress, aiming for universality and durability.
- Assembly: Underway, combining precision mechanics with selected components.



BUSINESS PLAN

- The business plan is on track, aligning with expectations and ensuring the project's long-term success.



Thank you!

