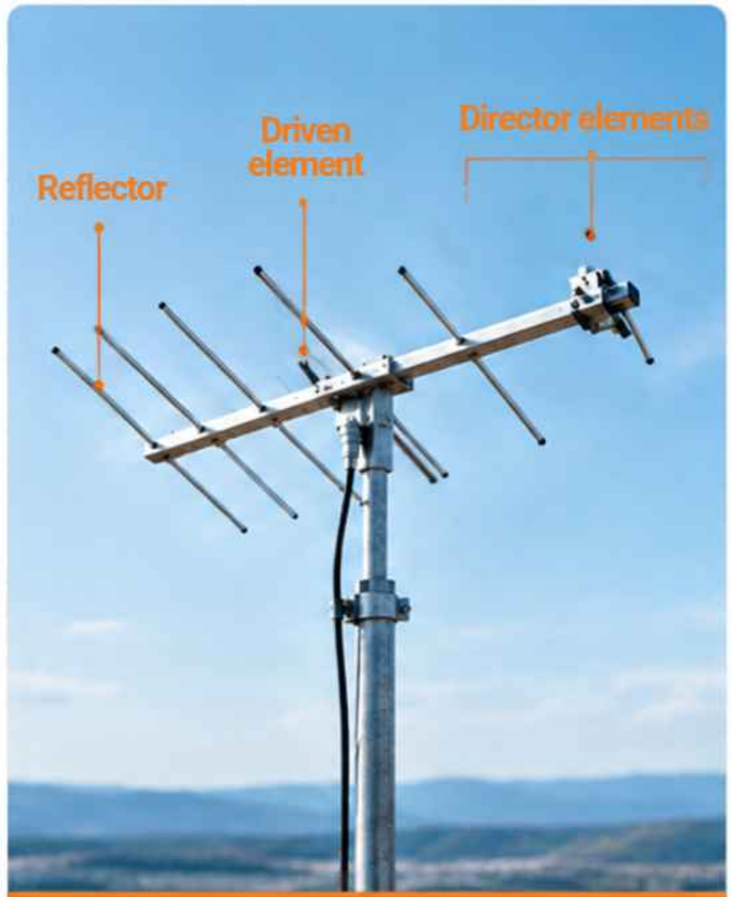
Yagi Antenna and Star Antenna

Design principles, performance, and application choices

Two Antenna Approaches

- A Yagi uses driven, reflector, and director elements to shape a directional beam.
- A star antenna arranges radiating elements around a central point.
- Geometry and feed design influence coverage, gain, and deployment requirements.



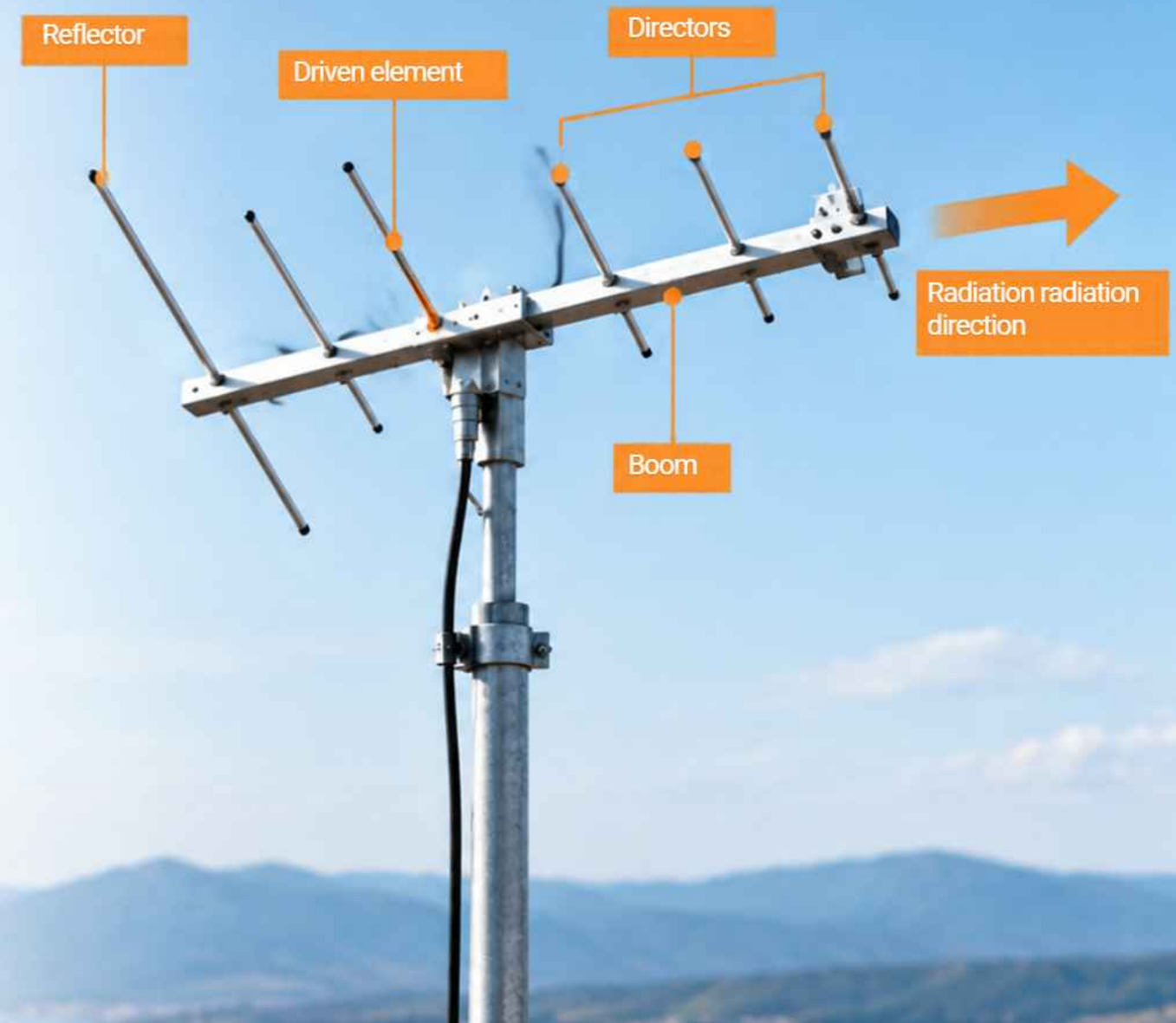
Yagi Array



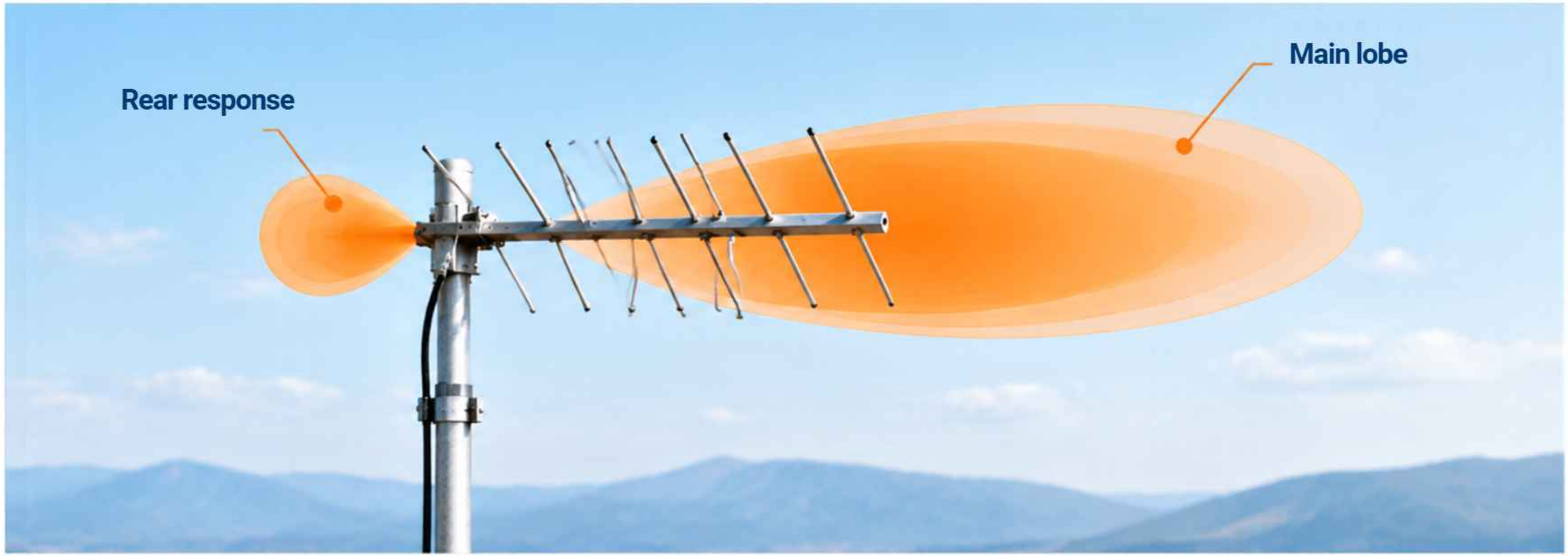
Star Antenna

Yagi Structure and Operation

- The driven element couples electrical energy into the array.
- The reflector and directors shape the array's directional response.
- Element spacing and length affect impedance and radiation characteristics.



Yagi Directionality



A focused main lobe supports applications that need directional coverage.

Yagi Design Considerations



Mechanical structure

Boom and element mounting must balance rigidity, weight, and wind loading.



Electrical tuning

Element dimensions and spacing shape impedance and operating bandwidth.



Installation

Mounting, feedline routing, and orientation affect field performance.

Star Antenna Design Choices



Element arrangement

Radial geometry sets the antenna's spatial coverage pattern.

Feed network

Balanced excitation supports the intended operating mode.

Polarization

Element orientation influences the resulting polarization characteristics.

Deployment

Mounting space and nearby structures affect practical installation.

Choosing Between Configurations

- Choose a Yagi when a directional beam suits the coverage objective.
- Consider a star arrangement when the required geometry and coverage call for radial elements.
- Validate frequency range, feed design, mounting constraints, and measured performance.





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