federated wireless

Shared Spectrum Update

March 2023

Federated Wireless

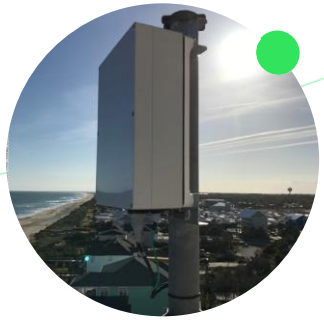
at-a-glance

Founded in 2012

HQ in Arlington, VA
124 employees

Pioneer in shared spectrum

$210M invested to date



CBRS market share leader

450+ customers

ALLIED MINDS · GIC · Charter COMMUNICATIONS · FORTRESS · cerberus · GiantLeap · LIGHTSHED PARTNERS

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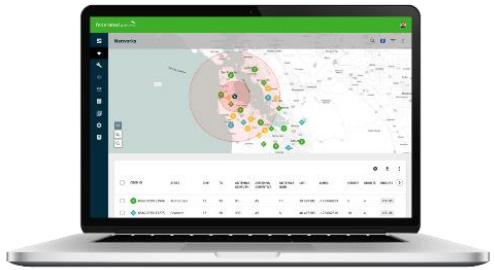
Federated Wireless
transforming wireless



CBRS SAS

- 48% market share
- Cloud scale and redundancy
- Unsurpassed features & functionality
- Multi-region architecture
- 99.999% reliability
- 24x7x365 NOC

Private Wireless

- Private 4G/5G Wireless
- Cloud-native managed service
- Shared spectrum + wireless expertise
- Solution integration
- 24x7x365 NOC
- Enterprise SLAs
- Simplified pricing

6 GHz AFC

- Conditionally approved
- Wi-Fi 6E support
- OEM agnostic
- Cloud scale and redundancy
- 99.999% reliability
- 24x7x365 NOC
- Contractual SLAs

Professional Services

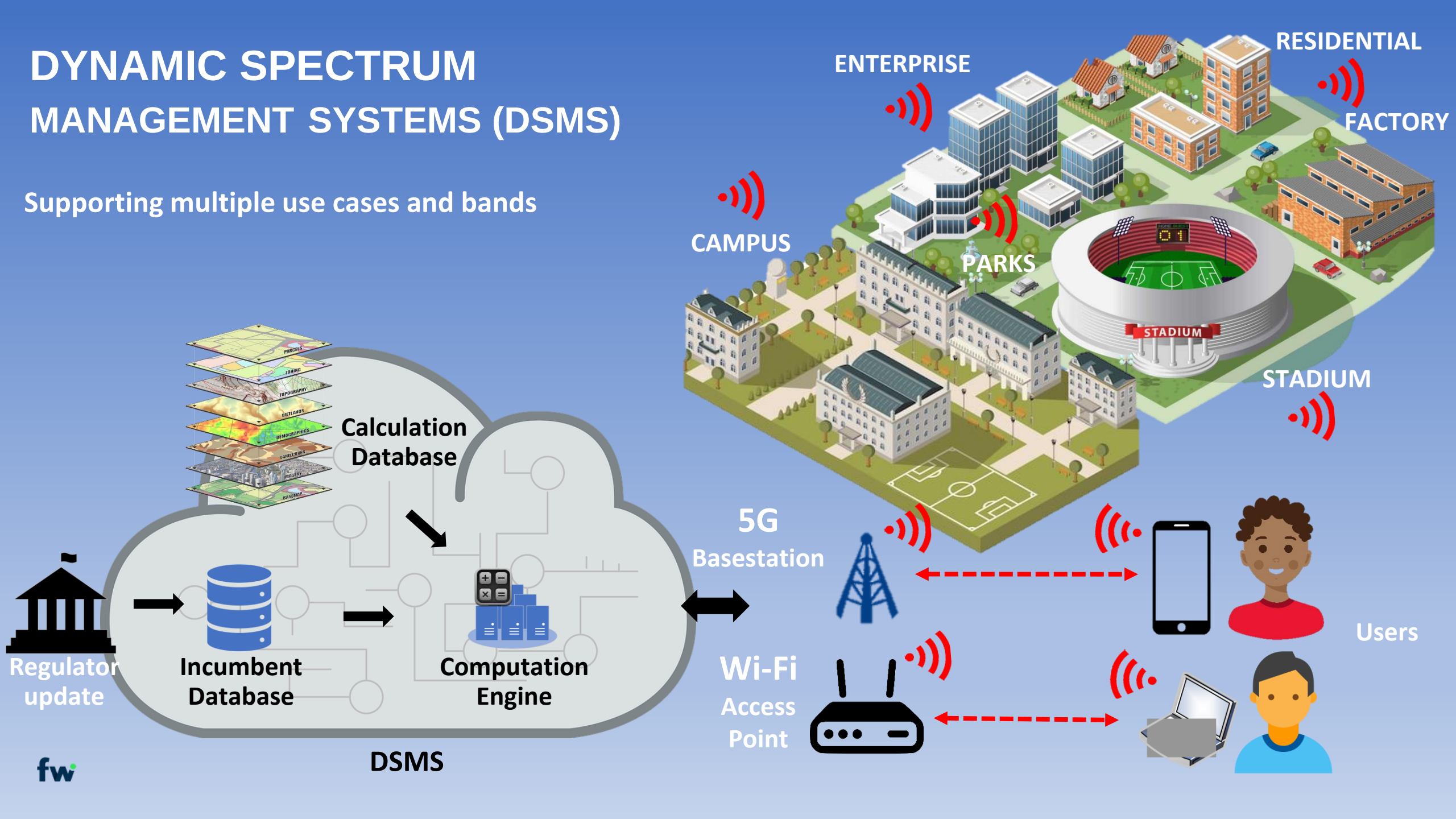
- Wireless design
- Spectrum assessment
- Network performance optimization
- Custom planning and support
- Online CPI Training

Autonomous UAS

- Spectrum management system for aviation
- Deterministic connectivity links for both crewed and uncrewed aviation applications
- Enabling beyond visual line of sight flights in controlled airspace

DYNAMIC SPECTRUM MANAGEMENT SYSTEMS (DSMS)

Supporting multiple use cases and bands



CBRS Market Status
strong momentum

- ✓ **More than 323k base stations deployed nationwide in 3 years**
  - Wide variety of mobile broadband, fixed wireless & private use cases
- ✓ **Record number of CBRS spectrum users**
  - 228 winners of 20,625 PALs
  - >900 GAA operators
    - Enterprises, smart cities, education, healthcare, rural WISPs, etc.
- ✓ **Vibrant competitive ecosystem**
  - Nine authorized SAS Administrators
  - 187 commercial CBSD models
  - 496 authorized client devices
  - >4000 certified professional installers

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Private Wireless for Enterprise

built for use cases at the edge

Government	Education	Real Estate	Agriculture	Manufacturing
Modernize operations with private 5G connectivity	Bridge the digital divide with reliable, affordable wireless internet	Differentiate with custom 5G-enabled IoT services	Automate operations with reliable coverage for your entire property	Reliable connectivity with high mobility for your most challenging edge sites

Logistics	Retail	Healthcare	Smart Cities	Venues/Events
Minimize disruption with private wireless connectivity	Rapidly launch new experiences to any device or location, indoor or out	Keep critical staff connected on all devices with private wireless	Reduce waste and improve lives with ubiquitous connectivity	Stand up private, portable wireless in days with a fraction of the hardware

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Spectrum Sharing at 6 GHz
Automated Frequency Coordination (AFC)

Proprietary Cloud Architecture

- Unique cloud architecture that utilizes offline computations for maximum responsiveness at scale

Precise RF Environment Models

- Massive GeoData database combined with machine learning for refined propagation modeling

Precise Incumbent User Models

- Proprietary database of Incumbent microwave antenna Radiation Pattern Envelopes (RPEs) to optimize spectrum availability

Dashboards & Analytics

- Solutions to provide unique insights into spectrum utilization, improve manageability, and troubleshoot issues

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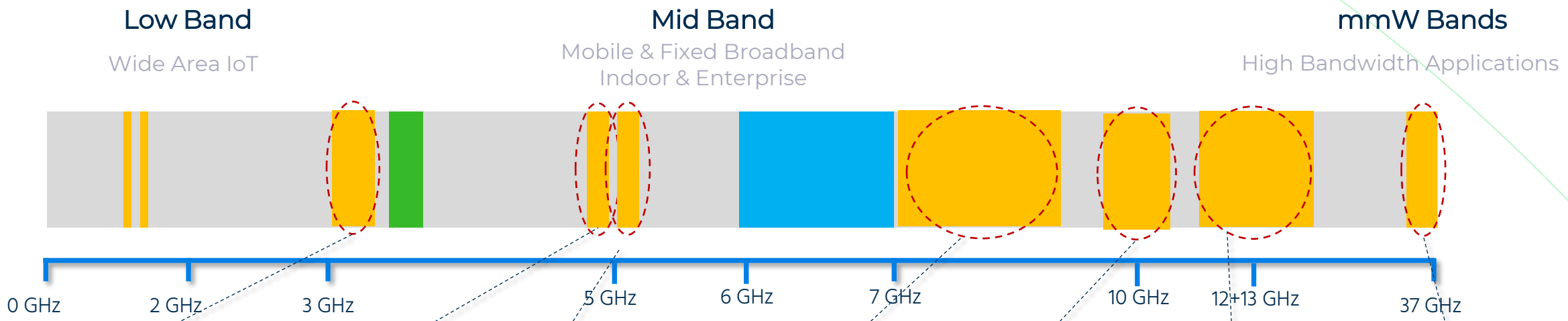
U.S. shared spectrum
near term opportunities



3.1-3.45 GHz

- DoD band
- PATHSS group exploring DSMS approaches

4.9 GHz

- Public safety incumbents
- FCC to select Band Manager for commercial leases

5 GHz

- 61 MHz terrestrial control UAS links
- Control-and-non-payload communications (CNP)

7 GHz

- 1275 MHz of federal spectrum
- Point-to-point links similar to 6 GHz

10 GHz

- 500 MHz of federal spectrum
- WISPA petition for AFC to enable sharing

12+13 GHz

- 1050 MHz of satellite+BAS spectrum
- Sharing being explored

37 GHz

- 600 MHz co-primary band
- AFC-like sharing for coordination

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