

Meshdynamics has developed and is testing an evolutionary wireless network concept, where the simulation world and real world are in lock step. Machine learning begins at the simulation end, and drives auto tuning algorithms to meet specific difficult use case scenarios.

The refined scripts and applications are then uploaded to real mesh nodes to complete the iterative loop. The mesh nodes, through rudimentary publish/discover/subscribe messaging, emulate SDN philosophy for low power devices at the edge.

Nodes resident trusted applications publish real time sensor streams for consumption primarily by other apps in the network. All streams are aggregated at the root nodes and transmitted to big data servers for analysis -- when connected.

Applications customize/tune network behavior, communicating with supervisory apps running on the cloud or a local computer. The distribution of resources (power, bandwidth) is managed collaboratively through the application layer. This keeps the Kernel simple. Java source code for the NMS and Heart Beat protocol are offered as an illustration of how applications on mesh nodes may publish and listen with their own proprietary heart beat protocols. See also:

[Collaborations Welcomed](#) [Dynamic Tree Topologies](#) [Self Classified Chirps](#) [Smart Simulations](#)



More Flexible Application by wireless LAN



Wired LAN



Courtesy Sharp Electronics, Japan (MeshDynamics Source Code Licensee 2015)

## Application Aware Mesh Networks

First depicted in simulation, [2002](#), driving embedded software architecture  
 2014-2017: Working prototype source code delivered to OEMs (e.g. [Sharp](#))  
 2017-2020: OpenWRT code base for Disruption Tolerant Networks:

## MeshSuite™ Benefits

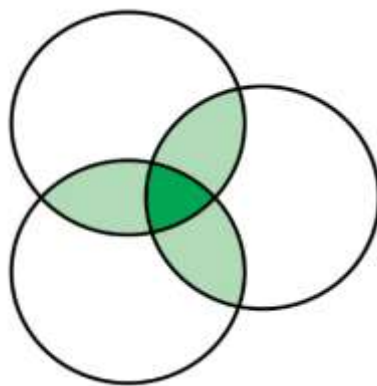
User level publish-subscribe apps: Simplify Kernel, to scale down for “[Chirp](#)”.  
 Logical Radios— assign logical radio modes to [multi-radio](#) or [single -radio](#)  
 Dynamic configuration of “[Model number](#)” based on changing environment  
 Disruption Tolerant – e.g. proactive fail over, no packet loss. [DTN Hospital](#)  
 Test bed in a box -- with real and virtual mesh nodes and “app” framework.  
 Access to experienced system integrators – accelerated time to market.

Dynamic Tree Topology

- Many Hops, Mobility
- Disruption Tolerance
- Learning Resilience

Abstractions

- Radio Card Agnostic
- Single & Multi-radio
- Application Pub-Sub



Real Time “Fog” Computing

- Real Time Data Streams
- Time Sensitive Networks
- Collaborative Scheduling
- PLC replacement in Node
- Industrial Internet Integration

MeshDynamics Intellectual Property \*\*

J01. Issued 08.07.2017	<a href="#"><u>Terse Message Networks</u></a>
J02. Issued 06.07.2016	<a href="#"><u>Chirp Networks</u></a>
J03. Issued 02.09.2016	<a href="#"><u>Chirp Networks</u></a>
J04. Issued 10.27.2015	<a href="#"><u>Collaborative Logistics Ecosystem: Extensive Framework For..</u></a>
J05. Issued 06.02.2015	<a href="#"><u>Real Time Packet Transforms To Avoid Re-Transmissions</u></a>
J06. Issued 04.28.2015	<a href="#"><u>Self Forming VoIP Network</u></a>
J07. Issued 03.10.2015	<a href="#"><u>Persistent Mesh for Isolated, Mobile and Temporal Networking</u></a>
J08. Issued 12.30.2014	<a href="#"><u>Chirp Networks</u></a>
J09. Issued 08.27.2013	<a href="#"><u>Persistent Mesh for Isolated, Mobile and Temporal Networking</u></a>
J10. Issued 08.20.2013	<a href="#"><u>Real Time Packet Transforms To Avoid Re-Transmissions</u></a>
J11. Issued 07.02.2013	<a href="#"><u>Self Forming VoIP Network</u></a>
J12. Issued 06.11.2013	<a href="#"><u>High Performance Mesh Networks- Switch Stack Paradigm</u></a>
J13. Issued 02.22.2011	<a href="#"><u>Mobility Extensions for Wireless Multiple Radio Mesh</u></a>
J14. Issued 02.08.2011	<a href="#"><u>High Performance Wireless Networks Distributed Control - Cont.</u></a>
J15. Issued 09.01.2009	<a href="#"><u>Managing Jitter and Latency in Wireless LANs</u></a>
J16. Issued 09.02.2008	<a href="#"><u>High Performance Wireless Networks Using Distributed Control</u></a>
J17. Filed 02.28.2018	<a href="#"><u>Evolutionary Wireless Networks</u></a>
J18. Filed 02.15.2018	<a href="#"><u>Chirp Networks (Continuation)</u></a>