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Global InterLink Corporation Corporate Overview

Capabilities and Case Studies

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Presented by:

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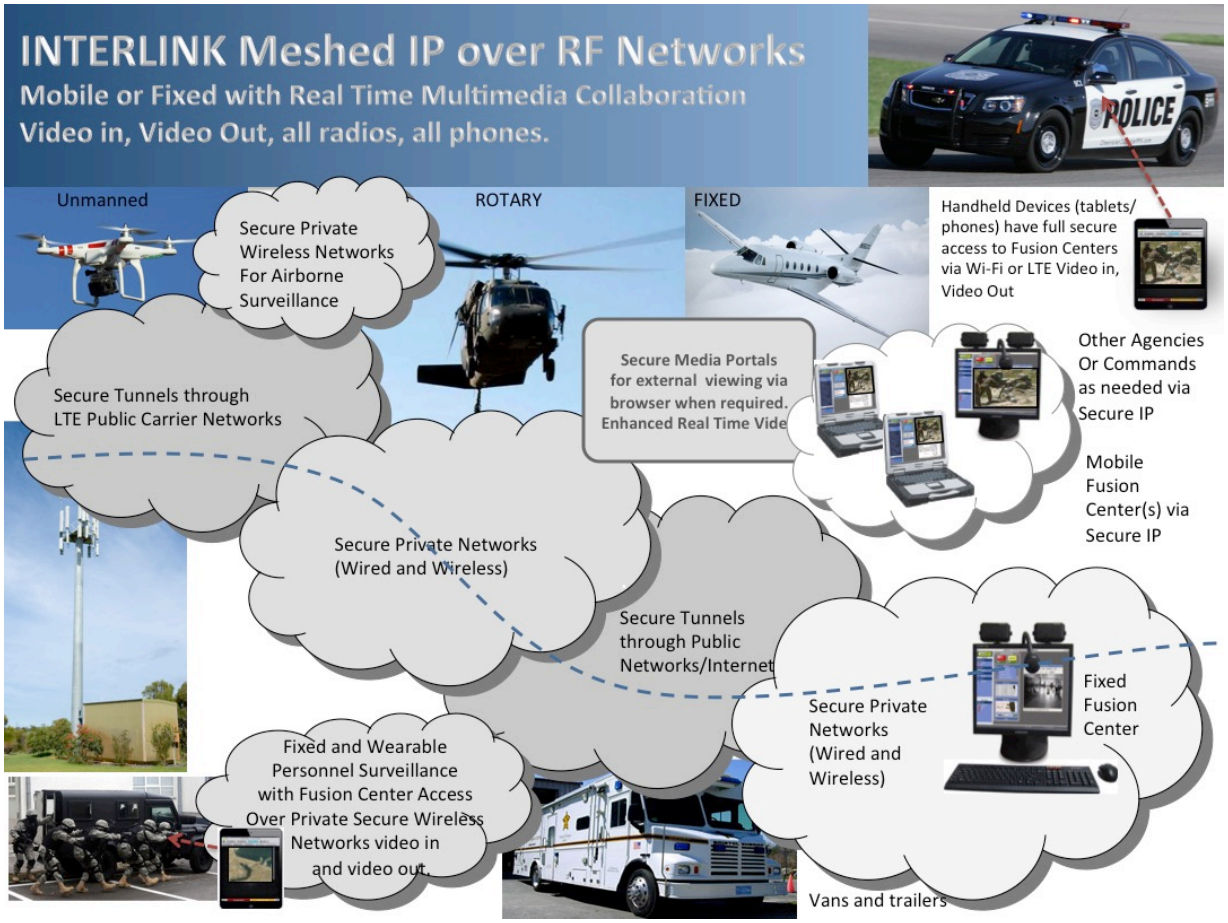
Corporate History

Global InterLink Corporation formed in 2012 with the purpose of taking its lifesaving, emergency collaboration technology and its rfπbased wireless ip technology to the global market place. As and outgrowth of InterLink USA, Global InterLink sought out the network of partners the company had developed during the 30-year history of DRA/InterLink USA. The founders of Global InterLink reached out to a former partner in the Middle East, who became a founding partner of the new corporation. Global InterLink then began forming partnerships/distributorships with Љΰă former partners from the Mission Critical Computing marketplace. Distributorships were thereby quickly established in Latin America, Canada, Europe, the Middle East, and Africa. Similar partnerships in Asia and Australia are currently being contemplated. Global InterLink Corporation has already won customers in Canada, Argentina, the UK, and the Middle East. The partners of Global InterLink have achieved the following:



GLOBAL PARTNERSHIPS

The greatest strength of Global InterLink Corporation lies in its strong, one of a kind, best available product offerings and in its global network of partnerships. Here are some examples of international partners and their accomplishments to date:

InterLinkUSA

Commencing in 2012, InterLinkUSA became solely dedicated to the online Emergency Collaboration marketplace. The corporation immediately established its reputation for quality products with high reliability, high quality, global logistics, and full support. Customers soon included:

In Tennessee:

- DoE's Oak Ridge National Laboratory
- The Cities of Morristown and Newport, Police and Fire
- Knox County Sheriff's Office
- Knox County Schools
- University of Tennessee Police

In Michigan:

- Wayne County Airport Authority
- Wayne County Office of Homeland Security and Emergency Management
- Detroit Dept. of Homeland Security and Emergency Management
- Chippewa County Emergency Management
- Monroe County Emergency Management
- Macomb County Emergency Management

In Canada:

- Essex County Emergency Management
- City of Windsor Fire and Police
- Town of LaSalle Emergency Management
- Sault Area Hospital Central Communication Center.

InterLinkUSA uses selected products, fully qualified for public safety and military users worldwide. Its solutions provide a measure of functionality, security, and ease of use unequaled in the emergency collaboration marketplace. Solutions include the InterLink IP Mesh Radios and the Mutualink Emergency Collaboration platform.

InterOP Canada

Based in Montreal, with facilities located in Saudi Arabia, InterOP Canada handles the domestic Canadian Market as well as parts of the Middle East. Successes in Canada include:

- Greater Toronto Airport
- City of Montreal Fire and Police
- Town of Stratford
- Canadian government

InterLink Latinoamerica

Based in Buenos Aires, InterLink LA handles the domestic Argentine market as well as selected other markets in Latin America. Successes in Argentina include:

- City of Tigre
- City of Florencia Varela
- SOFSE Trains, Buenos Aires

Other Partners

InterLink welcomes new partners such as TETCO of Giza, Egypt, and Ezermerval of Miami, FL, USA.

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THE NEED

Tragic incidents including the recent collisions of trains and autombiles and transfer trucks in the United States and the Lac-Mégantic rail disaster in Canada have underscored the need for faster, more efficient, more certain communication between trains and rail infrastructure in order to prevent disasters and for effective collaboration when handling emergencies. Access to command and control centers, the need for streaming of live video, the demand for interoperable multimedia communication involving a wide range of agencies and resources when and as needed, and the increasing demand for IP connetions for effective communicastion demands that high speed IP based communcation be available to trains at all times.

THE SOLUTION

The commuter rail system of a major Latin American City has deployed InterLink K Mesh (IP over RF) Radio Network. The initial installation involved a single line with 16 station and 26 trains. Each station has one node installed on a mast and each train contains two nodes with puck antennas mounted on the top of the engine cabin. Each train will stream two simultaneous High Definition videos. A key component of K MESH is the K MESH IP Radio. These radios have the ability to:

- Create LANs and WANs wirelessly over RF
- Connectivity under highly mobile conditions on the ground, water, and in the air
- Extremely fast, capable of handling many simultaneous video streams
- Near-Zero latency for streaming video
- Secure (proprietary protocol with up to AES 256 encryption available)
- High bandwidth (40 Mbs or greater)Highly configurable (WAN/LAN/VPN over wired and wireless links)
- Long range (tested at 6 miles without degradation, greater than 20 miles likely)

The InterLink Model 500 Radio is the world's first MN-MIMO radio ruggedized for military and public safety applications. MN-MIMO is the breakthrough technology that is ushering in the next generation revolution in commercial wireless data communications and enabling WLANs to support high definition video. The Model 500 uses the best of these commercial technologies while extending and improving the capacity, range and reliability of wireless communications for mission-critical needs in the military, first responder, and industrial markets.

- Create LANs and WANs wirelessly over RF
- Connectivity under highly mobile conditions on the ground, water, and in the air

- High data throughput rates
- Wide selection of Licensed and Unlicensed frequencies (from 400 MHz to 6 GHz including VHF, UHF, 800 MHz, etc.)
- Mesh network (self-forming, or managed)
- Multiple antenna configurations available; omnidirectional, high-gain directional or hybrid
- GPS and Support

The Model 500 transceiver, a stand-alone IP based packet MIMO radio, surpasses the capabilities of traditional single antenna solutions in many metrics and delivers capabilities that are unique to the target end user such as:

- Connectivity in NLOS (non-line-of-sight) multipath rich environments typical of urban canyons
- Connectivity under highly mobile conditions on the ground, water, and in the air
- Multiple antenna configurations available; omnidirectional, high-gain directional, or hybrid.
- GPS and Multicast Support
- Compared to conventional single antenna solutions, field trials have consistently validated the benefits of MN-MIMO
- 4.5x coverage increase in dense urban terrain
- lOx less transmit power for same range and throughput
- 2x increase in LOS range
- 2-4x increase in data rate

Field Tested Performance Highlights

- 3x-4x coverage increase over 802.lln Wi-Fi
- Bidirectional broadcast quality video from helicopter to ground at 44km
- Over 3km ground-to-ground video link

Missions Benefitting from the Model 500

The Model 500 is ideal for missions that require superior communications of voice/video/data in NLOS multipath rich environments. Examples of such missions include:

- Trains to trackside infrasture, stations, and central command and control
- Below deck wireless networking / ship-boarding
- Air-to-air & air-to-ground (manned, or unmanned)
- Urban ops, requiring video links within a building and with units outside the building
- Autonomous convoy
- Aircraft to ground high data rate transfer / comms
- First Responder urban network / relay

Ease of Use

Each transceiver enables bidirectional networking to simplify logistics. As an IP-Router, the Model 500 can be interfaced with countless third party applications, and a multitude of configurations are accessed via web pages within the radio.

The Model 500 allows for real-time management of all the radios in the network for TX power, frequency, channel bandwidth, link adaptation and other parameters.

Automatic link adaptation changes the radio operating parameters in real-time to provide performance as close to capacity as possible while not losing the link when abrupt changes in channel conditions occur such as moving around a corner or entering a building.

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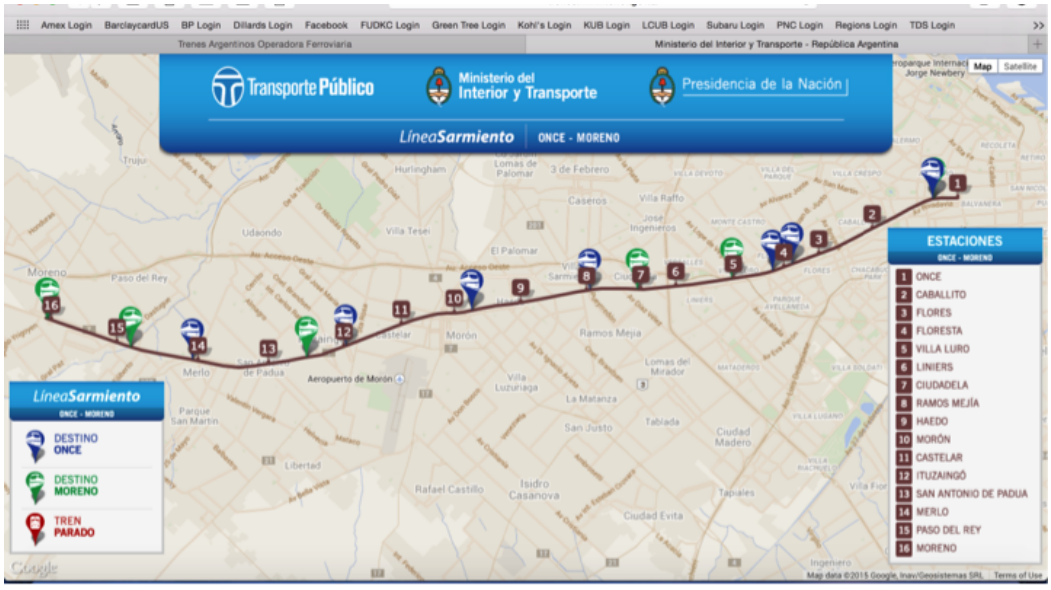
CASE STUDY: K MESH, A REAL WORLD DEPLOYMENT ON TRAINS

With the recent tragic events involving trains as well as the rising concerns about terrorist attacks on rail transport, there is renewed interest in both Rail safety and enhanced agency cooperation at national, r egional, and local levels. Rail lines such as the commuter lines of Buenos Aires have chosen Interlink and Mutualink as the best available technology to address their train safety and public safety issues. In the case of Buenos Aires the need for streaming video from trains results from a tragic accident in which an out of control commuter train rammed into a passenger platform in the Once terminus of the Sarmiento line. Seven hundred were injured, and 51 were killed (http://en.wikipedia.org/wiki/2012_Buenos_Aires_rail_disaster) in the Once Tragedy.

Operadora Ferroviaria Sociedad del Estado (abreviated SOFSE) (http://en.wikipedia.org/wiki/Operadora_Ferroviaria_Sociedad_del_Estado), the semi-governmental agency that manages the Sarmiento Line turned to Global InterLink Corporation and our partner company in Latin America, InterLink Latinoamerica, S.R.L., for a solution to allow real time streaming of live video feeds from the cockpits of trains on the Sarmiento Line. Each of the 26 Sarmiento trains was equipped with an InterLink Meshed IP radio in the locomotive cars leading and trailing each train, as well as the 16 stations along the primary urbanized portion of the Line. Supplemental relay points were established to resolve two problematic NLOS situations found to exist along curved and/or trenched sections of the line. The InterLink Meshed IP radios created a blanket of secure, high speed, long range ip coverage that encompased the entire lenght of the urban Sarmiento Line. The network mesh therefore consists of over 70 individual nodes, any number of which may be active at any given point in time. In order to reduce the number of hops from node to node, a backhaul line was established from end to end, situated on high (up to 90 meters) towers at each end and at two intermediate points. The backhaul network is cross connected with the operational network, using wired lines from stations to towers, thus providing a high degree of redundancy for the networks..



Multiple Trains at Multiple Stations or between stops, each train constantly streaming mulitple HiDef Video Streams. A private end to end network providing instance IP access to all stations and all trains, as well as to the Command and Control Center.

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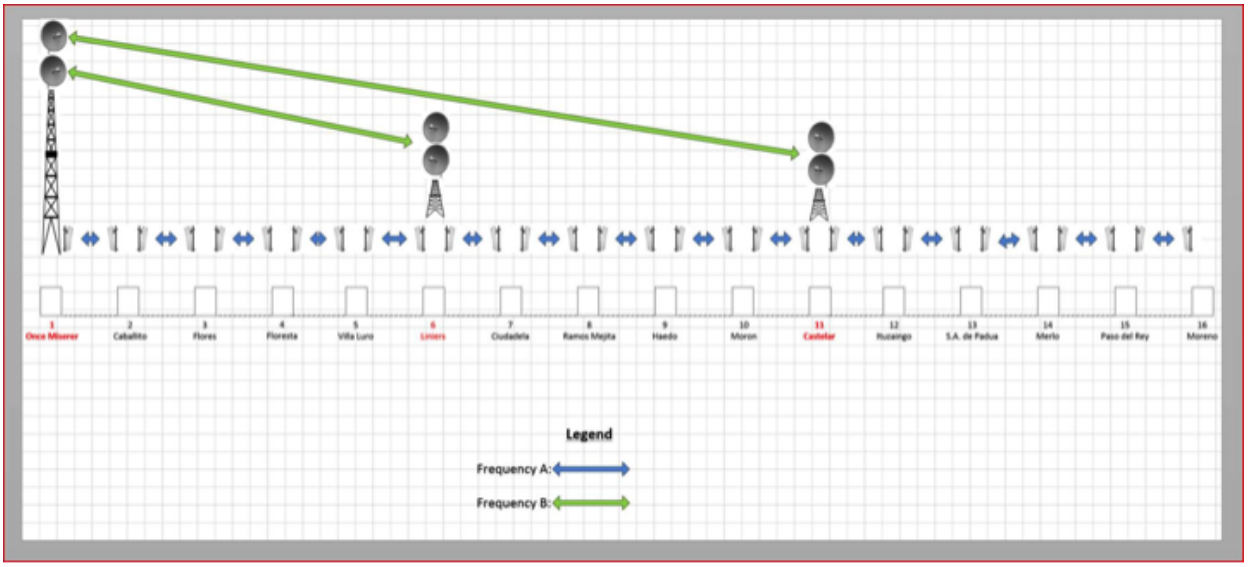
K MESH NETWORK ARCHITECTURE

The overall system design consists of one InterLink IP K Mesh Radio at each railway station and one InterLink IP Mesh Radio in each of two engine cabins on each train. The combination of all radios creates a continuous end to end private IP network. Each train is within the coverage area of at least one station at all times. The Network is self healing. Hence any node may relay any other node at any time to create an uninterupted mobile network at all times. There is no need for wired infrasture at any place within a given Network. However, if wired infrastructure is available for any segment of the Network such as from one station to another, wired lines can be used to supplement the Network as primary or secondary links. In order to further reduce the likelihood of Network congestion, a backhaul Network at a different frequency can be deployed as well. In one case a four node backhaul network was deployed. It is based on slighty higher towers than the station based nodes.



CUSTOMIZABLE K MESH NETWORK CONFIGURATIONS

Mesh networks allow unlimited flexibility in network configuration. Our specialists analyzed the Buenos Aires rail network and presented an optimal configuration that maximizes reliable throughput and minimizes overall network costs. The resulting configuration features the following:

- Ability to create LANs and WANs wirelessly over RF
- Connectivity under highly mobile conditions from trains to trackside infrastruture
- Extremely fast networks, capable of handling many simultaneous video streams
- Near-Zero latency for streaming video
- Highly secure
- High bandwidth (40 Mbs or greater)
- Highly configurable (WAN/LAN/VPN over wired and wireless links)
- Ranges longer, Signals stronger without degradation compared to non-MIMO
- Capable of relay over many nodes

K MESH and TRAINS IN ARGENTINA

Global InterLink's recent work in Argentina is an example our lifesaving technology. Consider a fleet of moving trains. Nowadays we rely on high-speed Internet connections wherever we may be. Trains and train crews are no exception. For instance, safety requires constant communication as well as high speed streaming video from the trains to their control stations. All that is most effectively accomplished over Internet connections. But how do you put a high speed Internet connection on a train that is moving along a track at 50 or 60 mph? Even in countries where cell coverage is good, 4G cellular systems are not reliable enough or fast enough for a lot of critical uses.

Put those trains in a country where cell coverage is weak and only 3G (or NoG) is available for large stretches of track, and you are left with no solution for onboard Internet connections at all. So here's where we come in. One of our company's products is a military/industrial class of radio that supplies high speed wireless Internet connections at great distances. Think of a super wi-fi that can deliver a reliable, very high speed Internet connection 20 or 30 miles away, or a slightly slower connection even up to 125 miles away--wirelessly.

Add that those radios can link (mesh) together wirelessly to create chains of relay connections that allow you to deliver Internet connections several hundred miles from the nearest wired Internet. Now you can see the application to trains. Through our partner in Argentina, we sold a bunch of our radios to the commuter trains of Buenos Aires. We installed them on all the trains on the commuter line, as well as in all the stations along the track, as well as on towers in the area near the trains and stations. Now all the trains, stations, and control centers are connected at high speeds, and they can collaborate with each other routinely, or instantaneously in the event of an emergency. For this we created a wireless network that blankets the entire area where the trains run.

Now, when you drive around Buenos Aires, you can see our antennas atop every front-facing and every rear-facing locomotive car on the entire line; you can see them on top of the railway stations and atop some supplemental structures located between stations; and you can see them on some of the highest towers in the city. (They are the little white "pucks" on the tops of the trains, and the square panels on the towers.)

Now we have orders for four more train lines. Soon the sighting of InterLink antennas will be ubiquitous thorughout the city of Buenos Aires.

RELATED NETWORK ARCHITECTURE

InterLink has delivered a number of InterLink Model 500 MN-MIMO radios to SOFSE and these have been deployed on the Sarmiento line. Other Lines are currently being bid. The number proposed will be determined by an RF survey considering all layouts, obstacles, and connectivity requirements. Each radio will serve as a node in the mesh as well as a point of entry for user systems and devices including:

- wi-fi hubs,
- routers,
- switches,
- PCs,
- handheld devices, and
- other IP connected devices and services.