

Platforms Wireless International Corp. – ARC System tethered communications aerostat

Peter Lobner, 2 December 2024

1. Introduction

The U.S firm Platforms Wireless International Corporation was an Oklahoma corporation founded in the late 1990s and headquartered in Westlake Village, CA. Between 1998 and January 2000, William Martin owned and operated a sole proprietorship called Intermedia Video Marketing Company. During that time, Martin provided consulting services to Platforms Wireless. Martin became Chairman and CEO of Platforms Wireless in March 2000.

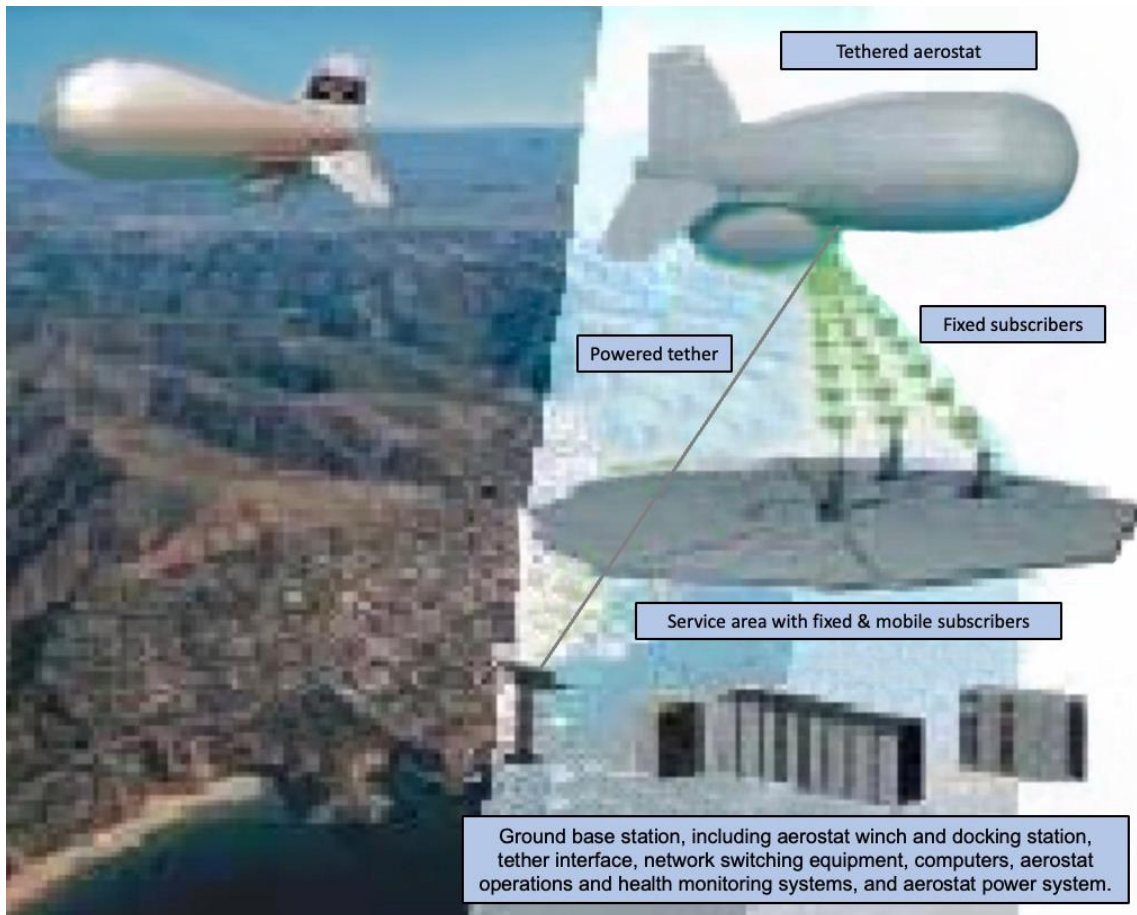
The firm announced in 2000 that it was the developer of an airborne wireless communications technology named “Airborne Relay Communications (ARC) System Core Technology,” which was designed to deliver wide area wireless services (TDMA, CDMA and GSM cellular phone service and VHF, UHF and 800 MHz radio service) from airborne platforms operating at altitudes between 1,000 to 5,000 meters (approximately 3,000 to 15,000 feet) above mean sea level (MSL). Platforms Wireless stated that each ARC System would have a wireless service coverage footprint of about 220 km (137 miles) in diameter (from maximum altitude) and could provide services for up to 1,500,000 fixed and mobile subscribers. The airborne platform could be either a fixed-wing aircraft or a tethered aerostat. Local service could be provided by a single ARC System. Regional service would require several ARC Systems with overlapping coverage areas.

An individual ARC System is comprised of three major components:

- Air vehicles to carry a communications payloads to designated geolocations and altitudes, either several airplanes flying in rotating shifts or long-endurance tethered aerostats.
- The communications payload, which would send and receive radio frequency signals from cellular phones and radios and consolidate and relay those signals to a ground base station.

- A ground base station, including network switching equipment, computers, and air vehicle operations and health monitoring systems. For an aerostat-based ARC system, the ground station also would include an aerostat winch and docking station, tether interface and an aerostat power system.

The basic ARC System concept of operations with a tethered aerostat is shown in the following diagram.



Source: Adapted from *Platforms Wireless* via S. Relekar & R. Pant (2005)

Platforms Wireless promoted the ARC system as a cost-effective voice and data communications system that could be used for a variety of applications, such as:

- Rapidly restoring communications services in response to natural or man-made disasters that have degraded or knocked out existing local or regional terrestrial communications infrastructure.

- Augmenting existing terrestrial communications infrastructure, for example, as a means of adding temporary capacity to systems in areas hosting major events.
- Providing rural cellular phone and radio service in lieu of alternative terrestrial and/or satellite service.

Platforms Wireless never built or tested a complete ARC System.

2. The ARC tethered aerostat

The ARC tethered aerostat design concept was based on successful large, radar-carrying, persistent surveillance aerostats deployed by the U.S. Department of Defense (DoD) and U.S. Customs and Border Protection (CBP), such as:

- DoD's Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)
- CBP's Tethered Aerostat Radar System (TARS)



The exterior configuration of a TARS aerostat is similar to an ARC System aerostat. Source: U.S. CBP

For the ARC System application, the general aerostat configuration was retained, but the ARC System Emergency-911 communications system would be carried in the large ventral enclosure, in place of radar systems.

General design characteristics of the ARC System tethered aerostat

Parameter	ARC System tethered aerostat
Length	46 m (150 ft)
Envelope manufacturer	Lindstrand Technologies (planned)
Envelope	Composite skin with helium compartments and air ballonet.
Envelope packing / unpacking cycles	More than 100
Primary payload	ARC System Emergency-911 communications system
Payload weight	Almost 680 kg (1,500 lb)
Tether	2.5 cm (1 inch) diameter powered tether with three main components: <ul style="list-style-type: none"> • Spectra / Kevlar fiber load-carrying elements. • Electric power conducting elements to deliver power from a generator on the ground to aerostat & payload systems. • A fiber-optic cable for high-speed data transfer between the ground station and the aerostat & payload systems.
Operating altitude	1,000 to 5,000 meters (approximately 3,000 to 15,000 ft) above mean sea level (MSL)
Coverage footprint	<ul style="list-style-type: none"> • Original claim: Diameter: 55 to 220 km (34 to 137 miles); Area: 2,375 to 38,000 sq km (917 to 14,700 sq miles), Subscribers: up to 1,500,000 • July 2007, Similar footprint, RECOM-911 subscribers: more than 25,000
Windspeed, max operating	Reported variously, 145 kph (78 knots / 90 mph) and 75 knots (139 kph / 86 mph)
Servicing interval	Monthly helium top-off. Requires aerostat to be hauled down to the ground and redeployed after servicing.
Availability	80 to 90%

The ARC aerostat was expected to deploy to altitudes up to about 5,000 m (15,000 ft). This is comparable to the maximum operating altitude of a TARS aerostat. The 2.5 cm (1 inch) diameter tether for

the ARC aerostat was based on a multi-element tether design by Lindstrand Technologies, which consisted of Spectra and Kevlar strength elements, electric power conducting elements to connect a power source on the ground to the aerostat and payload systems, and a fiber-optic cable to handle high-speed data transfers between the aerostat and the ground base station. The tether would be lighted at intervals, as prescribed by the Federal Aviation Administration (FAA) and a “no fly” zone around each ARC aerostat site would be designated by the FAA to warn aviators of the presence of the tether and the aerostat.

The availability of the ARC System aerostat is limited by two primary factors that require temporarily docking the aerostat at its mooring station:

- Servicing for monthly helium top-off and periodic envelope and payload maintenance. Advances in envelope material were expected to extend the servicing intervals.
- Protecting the aerostat during severe weather conditions. The maximum operating windspeed was expected to be in the range from 139 to 145 kph (86 to 90 mph), equivalent to a Category 1 hurricane.

Expected availability was reported to be 80 to 90%.

3. The ARC communication system

The two major elements of the ARC System Emergency-911 communications system were:

- The ROSETTA-911 Interoperable Radio Communications System, which provides interoperable radio/cellular communications facilities that enable different VHF, UHF, 800 MHz radios, and cellular telephones, to interconnect and communicate with each other.
- The RECOM-911 Rapid Response Emergency Communications System, which incorporates ROSETTA-911 in an airborne, transportable wireless communications system designed to provide 24/7 uninterrupted cellular and interoperable radio communications to emergency first

responders during and immediately following a catastrophic emergency, or a natural or man-made disaster. In July 2007, Military + Aerospace Electronics reported that RECOM-911 can provide service to a radius of up to 113 km (70 miles) with a service capacity of more than 25,000 users. The system can also provide Internet/VOIP connectivity, as well as data relay from video surveillance and sensor (radar) systems.

In December 2020, Platforms Wireless announced in a press release: “Platforms Wireless International (Los Angeles, CA) plans to carry out testing of its Airborne Relay Communications (ARC) system in San Diego, CA) before shipping the system to Brazil to be evaluated by Americel, cellular communications company.” In May 2001, Platforms Wireless reported in another press release that it had conducted a test of a prototype communications payload and, “The system, developed by Platforms Wireless International, demonstrated the capability of handling up to 500,000 cellular subscribers while supporting all of the popular wireless protocols, TDMA, CDMA and GSM.”

In their 2004 fraud lawsuit against Platforms Wireless, the Security and Exchange Commission (SEC) described this test differently.

“Platforms did take several steps to create the false impression that it was producing an ARC System. It engaged a subcontractor to construct the antenna portion of the ARC System and conducted a demonstration of that equipment for investors and invited guests. However, nothing resembling the ARC System as described in Platforms' press releases was demonstrated. No actual telephone call was transmitted by the system, and the antenna portion of the ARC System hung indoors from a crane rather than being suspended from an airborne blimp.”

4. Backup fixed-wing aircraft

The aerostat-based ARC System will be backed up by multiple fixed-wing aircraft, which would be deployed with the ARC communications payload to provide uninterrupted service whenever the aerostat is unavailable (i.e., during periodic servicing or severe weather).

5. Strategic partnership with Lindstrand Technologies

Wireless Design Online reported, “At the Platforms System demonstration in San Diego, California, on September 30, 2006, Dr. Per Lindstrand, founder and President of Lindstrand Technologies, and one of the world's leading authorities in aerostat technology, supported the Platforms RECOM-911™ System demonstration to the United States Department of Defense.”

In July 2007, Military + Aerospace Electronics reported that “Platforms Wireless had entered into a strategic partnership agreement with... Lindstrand Technologies ... who will participate in the development, enhancement, and integration of Platforms' Emergency-911 communications systems, as well as provide ground operations logistical support and command and control oversight of system deployments to critical emergencies and natural or man-made disasters. Lindstrand also will integrate and market Platforms' Emergency-911 systems with its own line of infrastructure and logistical support command and control systems.”

6. Raising funds

Platform's stock was not registered with the SEC, which reported, “Since March 2000, Platforms' stock has been ... traded on the Pink Sheets, now known as Pink Quote, an inter-dealer electronic quotation and trading system for registered and unregistered securities.”

7. Smoke & Mirrors

In their lawsuit alleging fraud by Platforms Wireless, the SEC reported, “In August of 2000, Platforms issued a press release declaring that Platforms ‘Unveils New Airborne Wireless Communications ‘Zero Gravity AeroStructures.’ The press release described technical details and performance characteristics of five discrete AeroStructure models. When the press release was issued, Platforms had only a description of how the ARC System would operate and did not have prototypes built, nor even the money to build a prototype.”

The SEC further reported, “During 2000 and 2001, (Platforms Wireless) issued a series of fraudulent press releases as part of a scheme to falsely portray Platforms' business activities and support its stock price. Platforms claimed to have an aerial system..... Platforms used these press releases to convince investors to purchase its stock and to support its share price on the secondary market.”

In July 2010, the Ninth Circuit Court of Appeals upheld the final judgment against Platforms Wireless and CEO William Martin, and affirmed that Platforms Wireless and Martin had sold unregistered securities to the public in violation of the law and issued a fraudulent press release in August 2000. The district court ordered Platforms Wireless and Martin “jointly and severally” to disgorge about \$1.75 million in proceeds from the stock sales plus almost \$1 million in prejudgment interest.

8. Epilogue

Platforms Wireless discontinued work on the ARC System at some time during the SEC fraud lawsuit. The firm posted a net operating loss of more than \$72 million for the quarter ending 30 September 2012 and, at that time, was seeking a “white knight” firm interested in acquiring or merging with the Company to benefit from its experience in emergency response communications system products and technology. By 2019, Platforms Wireless had exited the emergency response communications business and changed its corporate name to Body Basics, Inc.

9. For more information:

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- “Platforms Wireless Mulls Sale,” MarketScreener, 29 January 2013: <https://www.marketscreener.com/quote/stock/BODY-BASICS-INC-111313478/news/Platforms-Wireless-Mulls-Sale-39164236/>
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 - Lockheed Martin – PTDS 74K aerostats
 - Lockheed Martin – TARS 420K aerostats
 - Raytheon / TCOM – JLENS aerostat system
 - SAIC – Marine Airborne Re-Transmission System (MARTS) aerostats
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