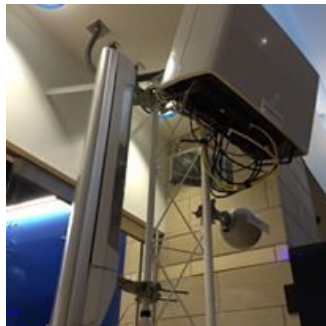
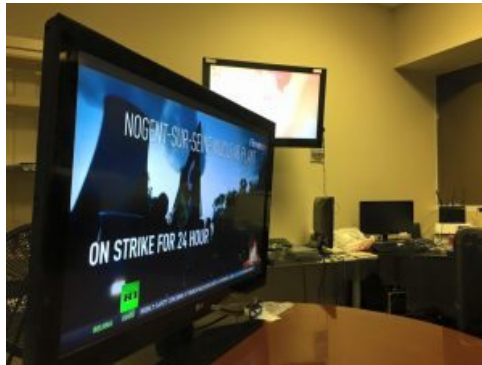
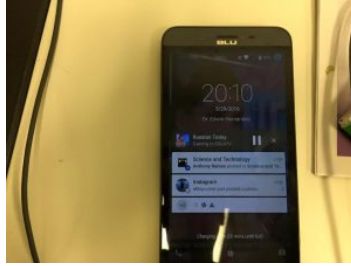
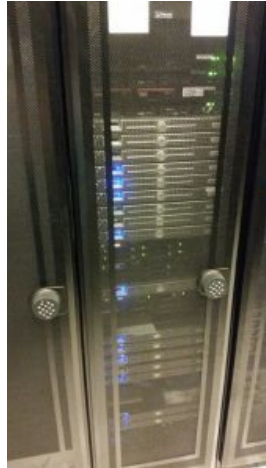


## Research



## Research and Development: Edwin Hernandez, PhD





## Media Streaming and Cable TV Systems

Our current R&D focuses on bringing cloud-platforms to CABLE TV and viceversa, including IPTV and OTT Delivery methods from cloud-based storage and streaming systems. As such I have developed the [Mediamply Platform](#) that includes:

- Mediaplug technology to deliver content from cloud to cable systems
- Mobile apps
- HTML5 Players
- API backend
- Cloud storage
- Auto-generated sites
- Backend for billing, sales
- Encoding/Transcoding

|

## Videos of Work Product in Streaming / Media

**Sample videos created by our platform.**

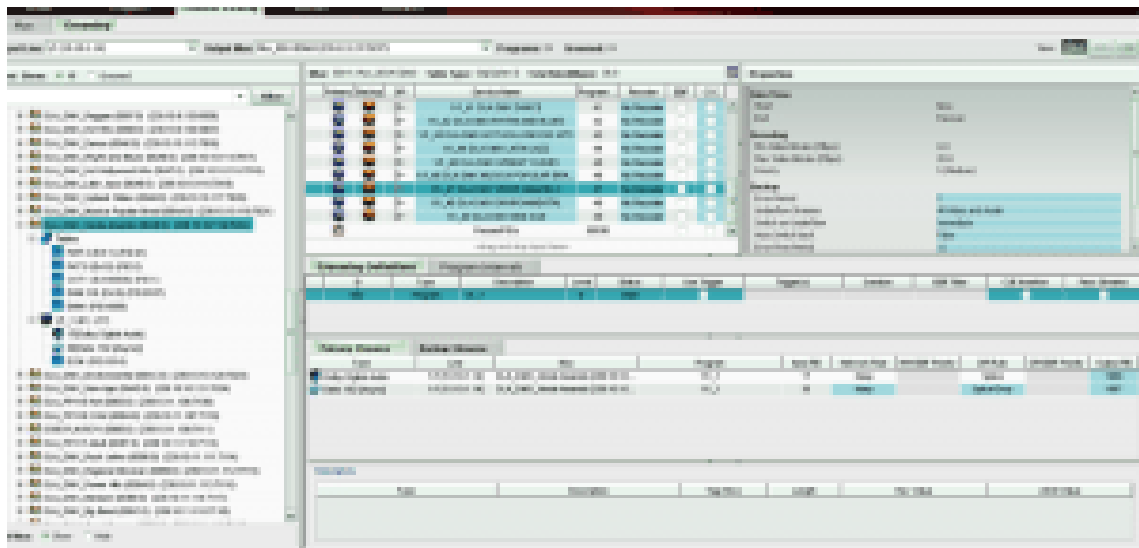
[embedyt] [http://www.youtube.com/embed?listType=playlist&list=PLMJ8I93HTXVCP8C1N\\_NUomYyKAjpxmFCh&v=80G-rh6DIns](http://www.youtube.com/embed?listType=playlist&list=PLMJ8I93HTXVCP8C1N_NUomYyKAjpxmFCh&v=80G-rh6DIns)[/embedyt]

## White papers

[spiderpowa-pdf src="http://edwinhernandez.com/wp-content/uploads/2012/05/Nuestra-  
Technolgia-Mediamply-White-Paper-Small.pdf"][Nuestra Technolgia Mediamply - White Paper  
Small](#)

[spiderpowa-pdf src="http://edwinhernandez.com/wp-content/uploads/2016/01/Edwin-  
Hernandez-Technology-Overview-Draft-Small.pdf"][Edwin Hernandez - Technology Overview -  
Draft - Small](#)





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## Cloud Platforms

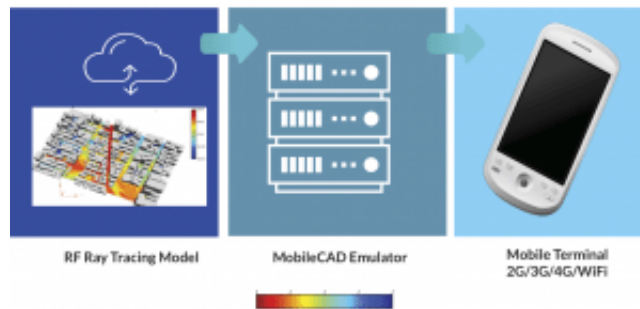
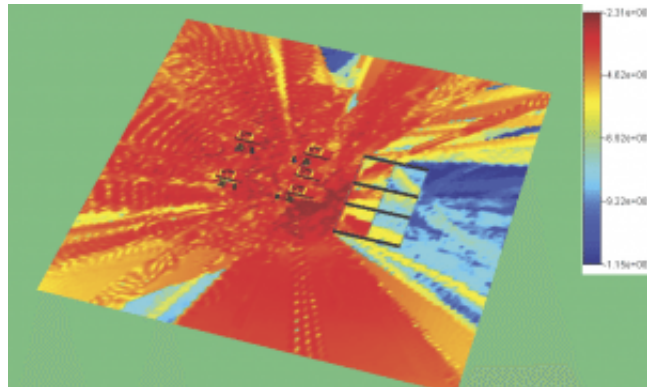
As a great beginning in 1999, I joined the High-Performance Computing and Simulation Research Lab, creating new and advanced HPC platforms, now the same principles apply to cloud-computing. The advancements in cloud allowed me to create a full-fledged lab allocated at EQUINIX.







## Mobile and RF Wireless R&D



- MobileCAD has been updated and modified to work with 4G/LTE as a prototype.



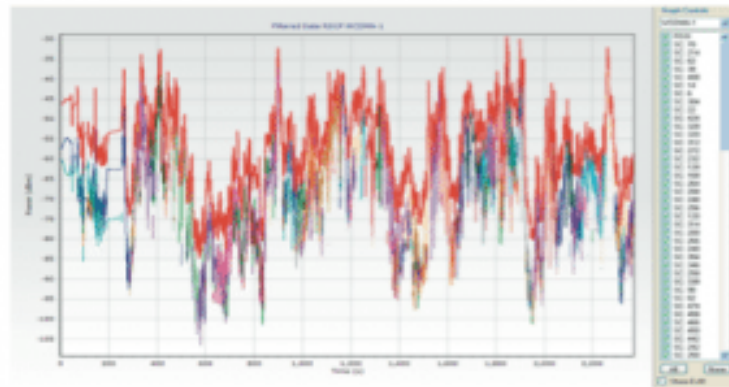


Figure 3: An example of the dynamic, complex nature of the wireless channel: more than 76 base stations were observed during a 35 minute drive test of a live UMTS network.

- Research and Development, Rapid Mobile Technologies Inc (Boca Raton, FL) July 2010-2014. N

Experience: Development of patent analysis and developing MobileCAD prototype using USRPs and software-defined radio technology including assembly and clock reference implementation using USRP and creating the simulation environment for fading and attenuation management to mimic RF/Network situations for a GSM device. Designed and developed 3G/4G version of emulator and create specifications for the device called MobileCAD.

[caption id="attachment\_590" align="aligncenter" width="225"]

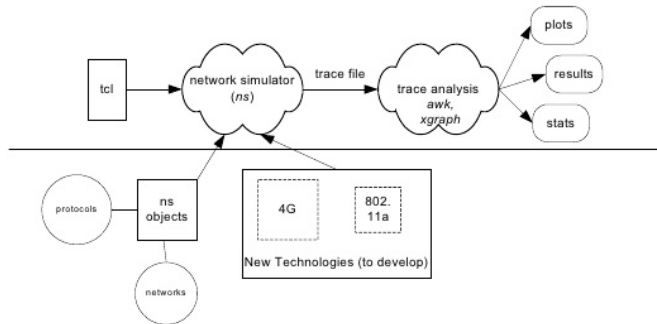


MobileCAD Parts - Prototype GSM[/caption]

- Research Assistant, University of Florida, Gainesville, FL, January?00-August?02

Experience: I investigated the effects of handoff and network mobility at different vehicular speeds. I used Mobile network simulation and emulation were important tools to study Mobile-IP and Layer-2/3 mobility protocols. I developed RAMON, Rapid Mobile Network Emulator, a device that emulates network layer mobility and programmatically replicates mobility conditions varying from signal strength, packet delay, BER, and speeds. RAMON uses real 802.11b Access Points, omni-directional antennas, embedded computers (e.g. PC-104) and custom-build control circuitry. RAMON also used a .NET interface to automatically create network topologies to be emulated. In depth routing protocols explored, IP tunnels, and low-level network device driver adjustments. I conducted extensive simulation work on ns-2

## Network Simulator (*ns*)



- The *ns* network simulator – Berkeley [Fall00]
- tcl/c++ object oriented, 20 Mbytes of code, wired and wireless network protocols

[caption id="attachment\_554" align="alignleft" width="300"]



RAPID MOBILE NETWORK EMULATOR[/caption]

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## Network Management and Adaptive Sampling (AI with Fuzzy

Logic)

# Results for Adaptive samplers

Results using the previous policies.

The problem is presented with  $H=0.5$ , where the STDev is 3.2 times the average value. High frequency components lost. With  $H=0.8$ , The STDev is only 0.31 of the average value.

Hurst	Method	Number of Samples	Average	Variance	STDev	MAX	MIN
0.8	Systematic Sampling (Ts=1s)	3600	416544.5	16863275404	129858.7	1068461	5883
0.8	Filter O(2)	1852	407298.7	13216398817	114962.6	1223451	7744
0.8	Filter O(3)	856	383969	11225787824	105951.8	733612	12048
0.8	Filter O(4)	596	378376	11762723717	108456.1	623401	11711
0.8	Fuzzy Logic Controller	3365	412254.2	15467361344	124367.8	949919	9795
Hurst	Method	Number of Samples	Average	Variance	STDev	MAX	MIN
0.5	Systematic Sampling (Ts=1s)	3600	280852.7	8.34901E+11	913729.4	11613106	0
0.5	Filter O(2)	1545	322924.4	7.40771E+11	860680.7	10128443	0
0.5	Filter O(3)	1428	316285.7	6.48586E+11	805348.3	8825943	0
0.5	Filter O(4)	1254	302533.8	6.3696E+11	798097.7	9885448	0
0.5	Fuzzy Logic Controller	1358	287494	4.72594E+11	687455.0	6463903	0

- Research Assistant, University of Florida, Gainesville, FL September,,97-December,,99

Experience: I joined the High-performance Computing and Simulation Research Lab. During my thesis work, I applied Fuzzy Logic in Network Management, focusing on how adaptive sampling could reduce captured statistics without losing important network behavior. Additionally, I researched ATM networks, SNMP (Simple Network Management Protocol), Virtual Interface Architecture (VIA) over Myrinet, CORBA, and High-performance Cluster Computing topics.

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## Wireless Power Management

- Program Manager Intern, Microsoft Corporation, Redmond, WA May'01-September'01

Experience: As an intern, I investigated self-similarity and power management algorithms for Wireless Networks. I modeled the method how service time per packet could

be estimated and used for QoS in ad-hoc and infrastructure networks.

|

## Network Management

- Network Engineer: Radiografica Costarricense, R&D, Costa Rica. January?95-July?95

Experience: I developed a microcontroller-based (x8051 and RUP1-51 micro-controllers) system to measure X.25 and PBX data traffic, Windows-based GUI, and X.25 frame captures

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