

Vehicle Software Management Solutions for the Automotive Industry

Technology
Vehicle Software Management

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Dr. Walter Buga
CEO

BIO: Dr. Walter J. Buga is a serial entrepreneur and strategic thinker with extensive knowledge of high-tech markets, products, and technologies. He is a telecommunications subject matter expert in both wired and wireless networks and technologies, who has designed large-scale systems that have been deployed throughout the world.

Dr. Buga co-founded Proximetry, Inc., in 2005 and served as its Chief Technology Officer. He was granted four patents for GateSync™ and few more are pending, as an inventor and Proximetry as a patent owner.

He has more than twenty years of extensive global telecommunication experience with the most recent thirteen years in design and deployment of converged, wired and wireless, network technologies.

Dr. Buga served as the Chief Technology Officer and Vice President of Engineering at NetStream, where he built green field facilities based IP/MPLS based network (spanning US West Coast from Seattle to Los Angeles), softswitch based services, and fully functional network operation center in Roseville, CA. NetStream raised about \$160M from UBS Capital and Cisco.

Prior to NetStream, Dr. Buga held senior management and leadership positions at Bell Laboratories of AT&T and Lucent Technologies, in Holmdel, New Jersey. He was a key member of strategic and advanced technology initiatives. In addition, he held leadership positions at ITU-T, ANSI, ATM Forum and the International Softswitch Consortium. For ten years, he has served on the Board of the Journal of Network and Systems Management. He authored and published multiple papers, tutorials, and presentations delivered at the most prestigious industry events and conferences. Dr. Buga holds BS/MSEE and PhD in Technical Sciences from the Technical University of Wroclaw, Poland.

Dr. Buga is also an active participant and contributor to multiple standards organizations and forums including IEEE, IEFT, ITU, ANSI, Broadband Forum, and TM Forum.

About Arynga:

Arynga delivers innovative vehicle software management solutions to the automotive industry. Our flagship prod-

uct CarSync™, is the most reliable, efficient, and intelligent platform for remotely updating and maintaining vehicle software and firmware. CarSync ensures the integrity of embedded systems for the lifetime of the vehicle, reducing recall rates caused by software glitches, and in effect, saves vehicle Original Equipment manufacturers (OEMs) and Tier One suppliers time and money, while improving customer satisfaction.

Interview conducted by:
Lynn Fosse, Senior Editor
CEOCFO Magazine

CEOCFO: Dr. Buga, what is the concept at Arynga?

Dr. Buga: Arynga is a software company. We provide a configuration management system for remote management of software and firmware updates for vehicles.

CEOCFO: Why the need for a specialized system?

Dr. Buga: In the vehicle you have a lot of computers; electronic control units (ECUs) which have millions lines of code of embedded software. They have more lines of code than an aircraft. They have the need to update the software for multiple reasons. One of the reasons is defects in the software. You can see it in the news that there are many recalls for a number of cars, because they have software errors, but also for new and future updates like navigation, refreshing the maps and also for infotainment system. Right now, when they have to do a recall you have to go to the dealership and take up your time and the dealer's time as well. It is inconvenient. Therefore, we are doing these updates remotely, so there is no need to go to the dealership for this

type of service. Also the update can be performed more effectively.

CEO CFO: What were some of the challenges in putting the technology together?

Dr. Buga: There were multiple challenges. Developing the technology was not a real challenge because of the experience of our team in the automotive embedded systems, networking, and cloud-based software systems. The main challenge is the adoption. That is because the automotive industry is not very fast regarding the movement into new technologies. They are organized very vertically inside the company. You can have sixty to one hundred ECUs in the vehicle; one ECU is controlling the brakes, other one the engine and the other one wipers. Today OEMs are vertically organized. That basically means that they have a separate organization/ department for every ECU. In order to do this right you really have to break this; you have to do more horizontal. Therefore, the challenge is not just technological, but also organizational. We have traction with the companies that are more progressive. They see the need for change and they are really looking for the solutions that are out of the box. Again, these are the companies with which we have the most traction.

CEO CFO: Has a concept like this been tried in the past or is this a really novel approach?

Dr. Buga: I think this is novel. There are several reasons, in my view, why it was not tried in the past. One reason is that 2007 through 2009 were very tough years for the automotive industry; caused by depression and other factors. Therefore, OEMs and Tier1s were mostly focused on the business and on how to survive and how to reorganize the company after Chapter 11 bankruptcies. In the mean time, smartphones became widespread. They missed this window. Now they see the disconnection. They see the disconnect between the lifecycle of the car and consumer electronics. That is because the car is designed for six or ten or more years and you refresh your phone every two years. This big disconnect is a significant problem that

needs to be solved. Now they are caught in this and the customers are requesting that the car be like a smartphone on wheels. Therefore, they are trying to figure out, not only how to save their money doing the updates with the software, but also how to keep the customer happy to make sure that they choose their vehicles instead of the competition. I bought a car for my daughter who is seventeen years old and the most important thing was not the engine, but connectivity to the iPhone and the smartphone and infotainment system.

CEO CFO: How will it work? How will people be able to make use of the software?

Dr. Buga: Our target customers are OEMs like for Ford or GM or Jaguar and also the Tier1 providers like Delphi or Continental. Tier1s are important because they are main suppliers of the electronic systems to

**“We provide a configuration management system for remote management of software and firmware updates for vehicles.”
– Dr. Walter Buga**

OEMs. How this works? This is the end to end process that has basically three components. One component is to prepare the software that needs to be updated in the car, and it may include multiple software images, scripts, boot loaders, etc. That is because there are many different elements/systems in the car. OEMs know exactly which ones need to be updated. Therefore, we have to package all this software for delivery over the air. We prefer to create smaller software release packages in order to reduce radio transmission cost. We create differential files and we use compression tools to minimize the size of these software packages. However, you can also do updates over WiFi at home or at dealership. OEM can deliver such compressed software released package to a dealer on a storage media, instead over the air; as such capability may not be available yet. Then dealer can update the car using the existing infrastructure, and reduce update time of a vehicle

from hours to minutes, because of the compression methodology used.

CEO CFO: What has been the response so far?

Dr. Buga: We are quite a young company, but committed to provide a leadership in this space. Therefore, we are frequently voicing our opinions at the industry various forums and venues. We are a member of the GENIVI Alliance, which is a big alliance with a lot of members from OEMs and Tier1s companies focused on creating open source software for building infotainment systems for automotive industry. We are contributing our own ideas and the software to the Alliance. As a result of these efforts, Arynga received a number of recognitions, including the second place (honorable mention) for a newcomer company in the Telematics space in June, by Telematics Update. Our engineers received two Most Valuable Contributor Awards from the GENIVI Alliance for our contributions. A number of market research companies wrote about us in their reports, including Forrester Research report: “The Connected Car, Prepare for the Next Computing Environment”. We are working with a number of OEMs and Tier1s, proposing to them our solution and the response has been very positive. I think the reason that we have a good response from the industry is that we designed the product just for the automotive market. We do not hesitate to tell them how we designed it. We demonstrated our product, CarSync, at multiple showcases so they can see the value of it and see our progress as well.

CEO CFO: Where did the concept or the idea to work on this come from?

Dr. Buga: That is a very good question. I am a telecommunications guy. In 2005, I cofounded the other company in San Diego called Proximity. The company is focused on management of wireless networks, and one of our projects was connecting aircrafts to the cloud, for infotainment content update. The project was named GateSync and client was Thales Avionics. Right now, the system is deployed worldwide at the major airports. I transitioned out of my company around 2010, as I wanted to

explore opportunities in the emerging connected World. I did a number of projects in multiple verticals, such as smart grid, healthcare, etc. One day I realized that fifty percent of the M2M connections are in Telematics. Therefore, I said "Wait a minute; if this is true that while I am doing other stuff, I connected aircraft to the cloud, so what about connecting cars to the cloud". I trademarked my new product as CarSync. I went to Detroit and met with a number of OEMs and my meetings basically confirmed the need; there is a problem. Every startup needs to deal with two basic elements. One is the problem that needs to be solved and the second is the solution. In this case I felt very happy, because I did not have to invent the problem. The problem really existed. Therefore, I just focused on the solution.

CEO CFO: Are you funded for the steps you need to take next?

Dr. Buga: Yes I am funded for the first gear. But in order to switch to 3rd or 5th gear, I will need to raise more funds, preferably from a strategic investor(s).

CEO CFO: What have you learned from your previous experiences that

has been most helpful so far in getting the company rolling, not just the technology?

Dr. Buga: The most important is the focus on the customer, but also creating the strongest team you can. I was lucky because I hit the ground running. That is because I had my software development team in Poland, ready to go. They were working for me in my other company and I knew them well. They were very good, very experienced guys. Therefore, I was able to hit the ground running, like I said. These days there is a lot of good news about Polish economy and Polish talent. Again, the focus on the customer; I spent a lot of time in Detroit and talking to the OEMs and Tier1s. I also met with many of them in Japan, Korea and Europe. We have at least fifty companies in the pipeline.

CEO CFO: Why pay attention to Arynga today?

Dr. Buga: Because this is coming! It is going to happen! As a matter of fact the connected car space is so hot right now, because people want to have them. Right now we are focusing on updates of the software, but this goes beyond that.

It will include vehicle to vehicle communications, with big impact on safety and crash prevention. Data mining and analytics opportunities are huge. These applications will include remote diagnostics, preventive maintenance and many other innovations. This is a completely new space. It is very, very interesting and moving very fast. As I said, it is very hot. You already see M&A activity as well. Just recently, Sirius XM acquired Agero for about five hundred millions USD.

CEO CFO: Final thoughts?

Dr. Buga: I am not looking for money right now, but we will be looking for money soon, to take the company to 3rd or 5th gear. So it is important that your readers can understand what we do, as they may discover mutually beneficial business opportunities with Arynga. We are looking for partners, because we are part of the ecosystem and the ecosystem is new and still very fragmented. I hope that your readers can learn about us and they can figure out how we can work together with those companies that have interests in this space.



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