

News

VON BRAUN LABS

WE PROVIDE COMPLETE SOLUTIONS

WHO WE ARE

OUR SOLUTIONS

HOW WE DO



Greetings from
Dario S. Thober
- CEO



Find out about
our complete
solutions



Learn more
about our
technologies

THE HEADQUARTERS

Our main office is in Campinas - one of the biggest cities in Brazil



➤ ABOUT US



WHO WE ARE

Wernher Von Braun Labs for Advanced Research is a non-profit private organization. It provides R&D and Innovation services to Companies and Government institutions. If required, based on the technical novelty it develops for its customers, the Center organizes the associated processes (industrial and others) to make ideas come true as new products, services and businesses to its customers, assisting up to the pilot-implementation phases.

GREETINGS FROM THE CEO

With the head in the sky and the feet firmly set on the ground” – this is how I would describe Von Braun Labs, meaning we are moved by the ultimate exploration goals in science, building our way by generating tangible and valuable innovative results in the process. Our Team of collaborators covers all the aspects required to transform exploration ideals into results, which, by consequence, propel further exploration. The Center’s unique characteristic is not only to create

and develop ideas and solutions, but also to structure the whole ecosystem to make it real and commercially viable. We named our Center after Dr. Wernher von Braun’s accomplishments because he and his Team represent the guiding light and inspiration for the model that we make to provide new horizons and value to customers and collaborators. I invite you to explore this brief explanation about our experience in the segment of IoT as an example of our approach to innovation.

- Dario Sassi Thober, Founder and CEO.



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São Paulo’s All
Electronic
Tolling System



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How We Do



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IoT Solutions

➤ SÃO PAULO'S ALL ELECTRONIC TOLLING SYSTEM

The newest multi-lane-free-flow (MLFF) system that was engineered by Von Braun Labs that runs in São Paulo - the most influential state of Brazil

São Paulo State in Brazil has a new All Electronic Tolling Collection (AETC) system based on secure RFID since 2012. Von Braun Labs conceived and coordinated all the aspects of implementation for the São Paulo Transportation Agency (ARTESP) in 19 Highway Concessions.

The system allows multiple Service Operators working independently and securely with their own installed base of customers. The Toll Plazas have the same infrastructure (the RFID reading system) to serve all the certified operators, locally integrating all other aspects of vehicle identification and classification.

The tags are commercially available 915MHz technology with advanced security mechanism not only to protect the data stored in the tag, but also to validate and secure the communication done over the air between the tag and the reader. Reading systems are based on commercially available readers enhanced by secure custom commands, a local processor which communicates with a central BackOffice / IT system managed by the Government, to be continually certified and updated by it with the secure keys that are generated and kept only by this BackOffice, plus a Security Application Module to protect the keys locally in the reading system.



THE GOVERNMENT AND THE PRIVATE SECTOR

ARE WORKING IN SYNERGY WITH THE

SUPPORT OF VON BRAUN LABS



The system has an automated messaging mechanism which automatically and securely manages the exchange of data among the complex reading infrastructure across multiple Concessionaires and Service Operators. By distributing information per each user, the entire system boots up in less than 4 minutes, hence providing a way to correctly charge and secure the services personalized to all individual end-users.

In less than 15 months the number of Service Operators offering automation to end-users jumped from 1 to 4 and the number of hardware contractors from 2 to more than 10; the cost of a Free-Flow AETC Portal went down by a factor of 10; the end-price of a tag by a factor of 2 in average.

This system is now under expansion to all states in Brazil under an official program regulated and developed by the Brazilian National Agency for Terrestrial Transportation (ANTT). Another national program based on electronic identification aimed

for products / cargo and fiscal, sanitary, etc., inspection (also conceived and supported in all aspects by Von Braun Labs) called Brasil-ID utilize the same technical framework to the identification, tracking and authentication of goods under a very similar system's architecture, allowing a complete integration with the fast-growing infrastructure provided by the ARTESP and ANTT AETC programs.

The Center provided support to all infrastructure and engineering Companies coordinating the integration and operation at all levels – from the hardware in the tags and readers to the IT systems at Companies and Government, including the installations on the field, managing to adapt each single player and their previously adopted systems into one interoperable, fine-tuned system which at this moment operates with more than 10 million AETC transactions each month (a number which is growing exponentially at this moment).

MULTI-LANE FREE FLOW SYSTEM

ENGINEERED BY OUR CENTER



➤ BRASIL-ID

How Von Braun Labs coordinated a nationwide project and set the standards for the Radio Frequency Identification (RFID) systems in Brazil

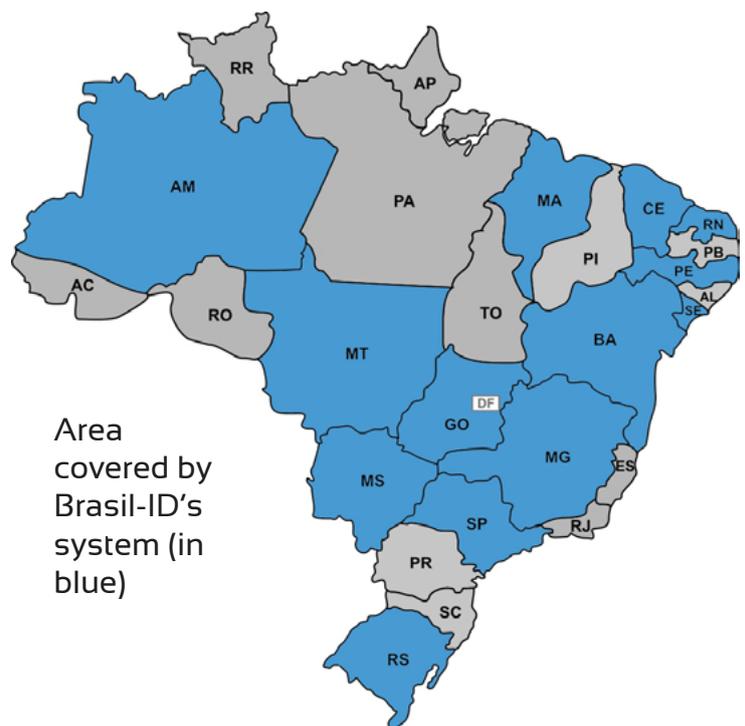
The system called Brasil-ID is the official IoT program structured in Brazil to create a base-market for the new frontiers of digital information over 'things', which helps consumers to benefit from new valuable information on the cloud of things surrounding them and institutions in general (Government and Companies) to reduce their operational risk and costs while increasing the number of services and their respective quality.

The system was basically conceived on RFID technology because it represents the smallest standardized wireless piece of electronics able to carry advanced secure encryption mechanisms, which is able to carry several different sensors and to secure ID stored and data being transferred over the air.

In fact, Von Braun Labs has the capability to develop and demonstrate one of the first (if not 'the first') passive, i.e., that does not require batteries to operate, RFID single semiconductor device with advanced security (AES128) embedded which operates under 3 milliseconds reading cycle-time at GSI/ISO committee events in 2013 (Orlando, FL). The new ISO 29167-10 and ISO 18000-63 standards being defined at this very moment represent a variation of this possible implementation.



FISCAL OFFICES AROUND THE COUNTRY



On the other end of the system, the Center developed all the other necessary tools to implement the operation nationwide like compatible RFID readers, middleware to integrate multiple reading systems of a vast network of devices and the Central BackOffice / IT management system which allows multiple independent Private and Public operators to provide services to individuals and Companies.

Von Braun Labs worked on all the fronts to implement the system – helping the Government to have the means to generate and organize the laws and regulations associated with the system, coordinating the integration of the work of other R&D institutions which developed the several mechanisms / sub-systems required and multiple 35 Companies to address multiple applications like ID, Tracking and Authentication for Food, Electronics, Pharmaceuticals, Cigarette and other segments.

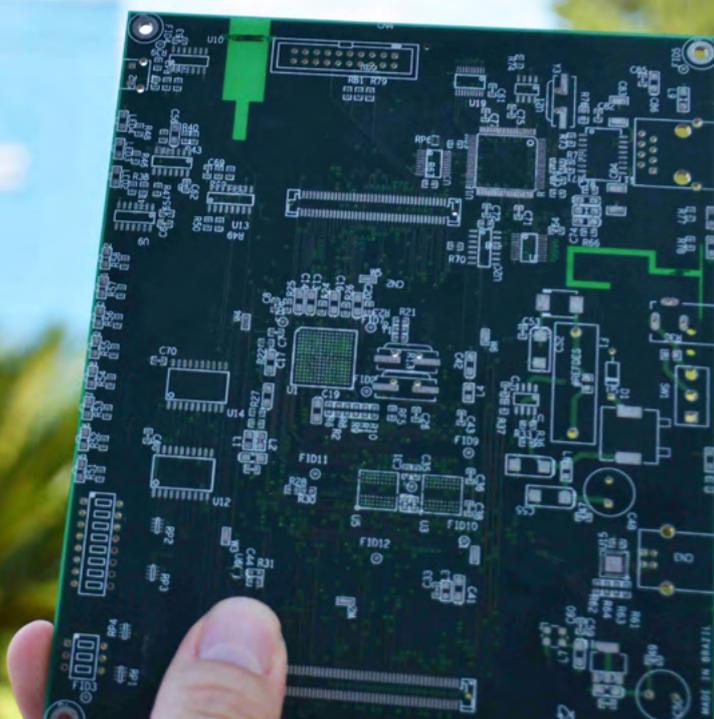
The systems are now integrated and on November

2014 the first massive-pilot involving transportation Companies and their transit through fiscal checkpoints equipped with Brasil-ID systems was under way. There are several phases in this program. In this first phase ground transportation will be addressed by identifying vehicles and their cargo with the aim not only to prove a significant reduction in inspection time and infrastructure, but also the benefits for the Companies in their logistic and commercial operations.

The system is also integrated with other national RFID systems conceived and developed by Von Braun Labs, which have already a vast infrastructure installed for All Electronic Tolling Operations in more than 50 Concessions across Brazil. In the following phases, besides trucks and containers the other elements will receive an indelible RFID embedded in their structure – like with Printed Circuit Boards, Pharmaceutical Protecting Labels and Sanitary Seals providing unique and indelible identification to each item in another wave of a massive pilot-run.

EXAMPLE OF RFID TECHNOLOGY THAT CAN BE

DEVELOPED BY VON BRAUN LABS



➤ HOW WE DO

The unique value of the Center for its customers is the combination of the following topics below

Development of novel & complex solutions, i.e., solutions that involve multiple technologies precisely combined to an efficient and cost-effective, holistic view of the implementation's aspects of innovation.

Von Braun Labs organizes an ecosystem of Companies and institutions in such a way that the end-customer profits not only from the solutions Von Braun developed, but also (and if it's required) from direct access to Semiconductor Foundries, Contract Manufacturers and alike, already developed by the Center to handle each component of the solution, significantly reducing the cost

of a system integration, with huge increase of intelligence over the strategic processes involved to the end-customer.

The Center approach to projects is to forge it by projects built on solid established phases, which prove, step by step, the feasibility of a new idea – a concept known as 'Lean Innovation' in Von Braun Labs's own way.

When necessary, by customer's request, the Center has special mechanisms to help funding projects under tax-exemption supported by the Government – either directly or from other related sources.

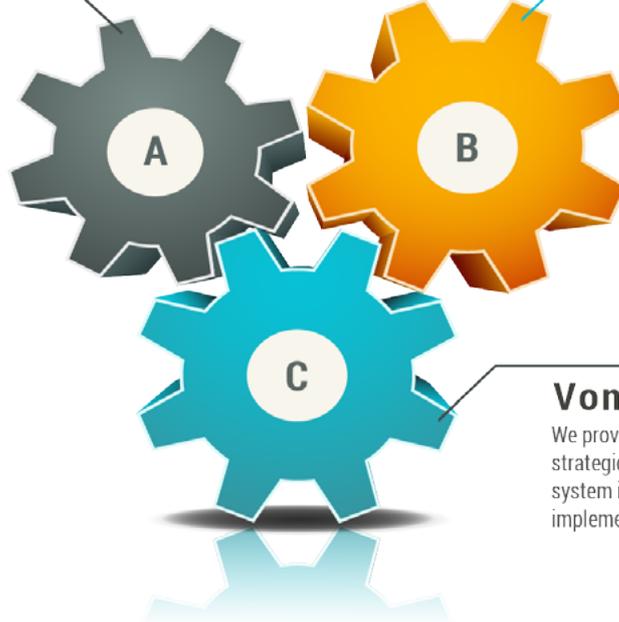
Your Company

The business status-quo and its challenges are brought to the table



Your Customers

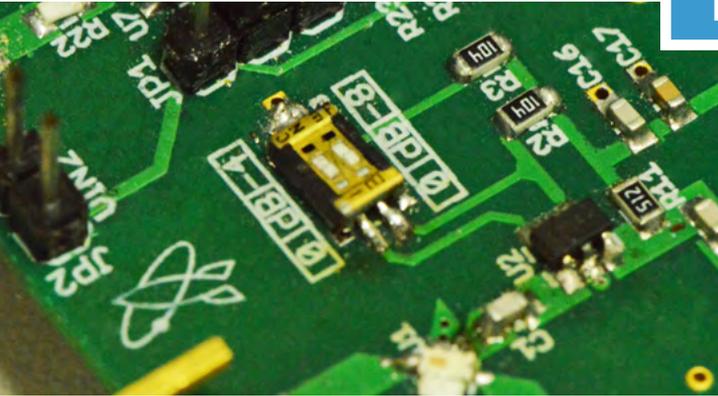
The potential clients will be reached even more through our services



Von Braun Labs

We provide solutions, support and strategic components, as well as the system integration's blueprints and implementation roadmap

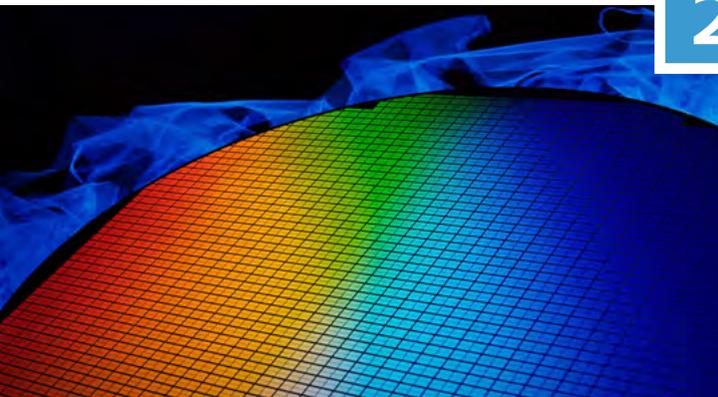
1



MAIN AREAS OF EXPERTISE

Our team has experience developing Software and Firmware at all levels of abstraction. Besides that, we provide the hardware design and its industrial implementation, which covers the semiconductor design and its associated fabless operation. We also provide applied physics and, when it is required, complete systems integration including pilot-operation to achieve the complete innovation process.

2



IC DESIGN AND MANUFACTURING

The Center structured a complete Semiconductor Fabless Operation in Asia and other regions of the world, from design to the end product with special solutions in ultra-low power and mixed-signal segments. The Center has its own library of IC blocks, design & fabless capability to give its customers concrete means to strategically have their own products and complete domain over key-components.

3



SOFTWARE DEVELOPMENT

The Von Braun Labs staff uses several operating systems to develop software solutions from all levels of abstraction. We develop using higher level technologies, such as C#, Java, C/C++, ASP.net and PHP that can be connected to a wide range of databases (e.g. Oracle, SQL Server, MySQL). Our experience with software goes beyond the higher level of abstraction and also covers micro-controller programming and firmware development with components that interact with real world devices using both wired and wireless communications.

“

Von Braun Labs is able to get the conceptual idea and desire from a company and transform it into a new, structured and operational business division.

”

VON BRAUN LABS' IOT ECOSYSTEM

The Internet of Things is going to be the next big new thing when a secure wireless device can be embedded in virtually any object

IT'S POSSIBLE TO INSERT OBJECTS IN TO THE WEB

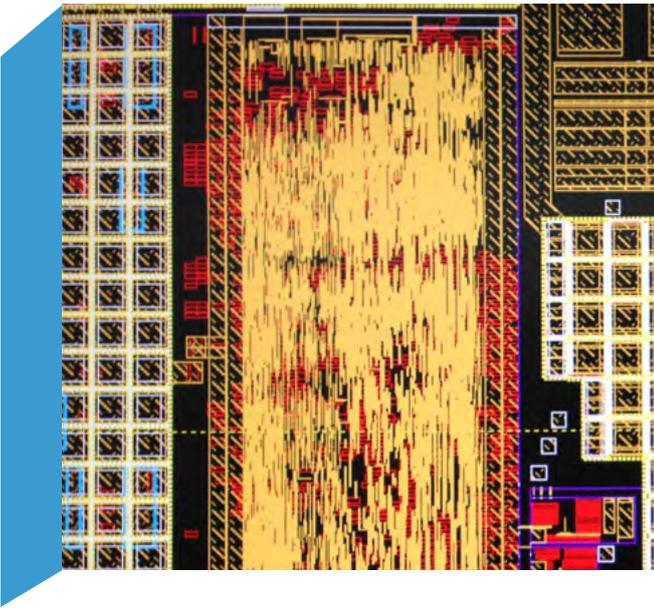
Objects vary a lot in shape, form and functionality, but there is a way to insert them into the virtual world: a data-secured, single wireless device that is able to be embedded into any type of product following an international standard is the secure RFID device.

It is not about the device itself, but about the entire system acting as an enabler to multiple service operator, which simultaneously share and utilize the same device across its life-cycle, but always with controlled access only to its own private

data. Complete systems as a platform for multiple application is the concept that Von Braun Labs promotes and has already shown a proven record of success.

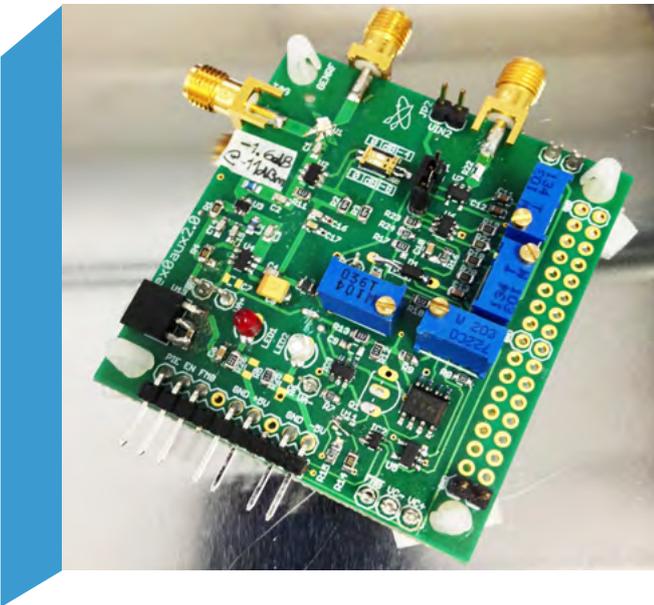
Besides the hardware, software and IT system required, Von Braun Labs has a seasoned experience in dealing with complex integration and operations' scenarios, which are key to consider the legacy systems in the customer's context to make robust and successful businesses.





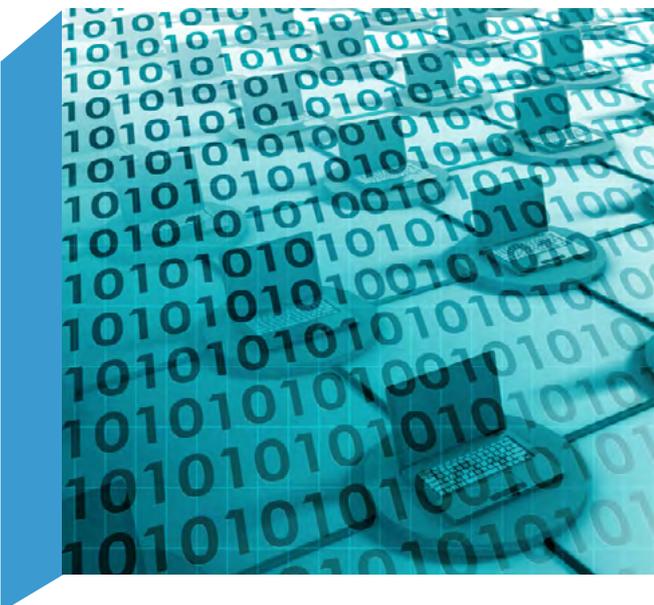
IOT FRAMEWORK

Von Braun Labs can develop a complete set of new and advanced technologies in semiconductor that integrates individual items in your production chain and creates a complete IoT ecosystem. With the power of wireless technologies and intelligent interfaces, data transmission becomes seamless and each device has its own identity.



WIRELESS SYSTEMS

An extremely cost-effective Read/Write hardware can also be developed to address large-scale operations where local systems (like for All Electronic Tolling, Logistics, Automated Optical Inspection, etc) must be integrated into one piece of hardware. This solution complies with international standards also including the required custom commands, which are necessary in the communication with the transponders.



BACKOFFICE & INTEGRATION

Von Braun Labs can develop a complete set of solutions in the assembly of an automated Big Data and IT Operations Management System to address the required interfaces with Billing Systems, Third-level Verification as well as Central Server System to integrate and manage multiple parallel Service Operations. Based on proprietary or open-standards, Von Braun Labs solutions integrates and adapts to the customer needs while saving system resources already in operation.



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