WE PROVIDE COMPLETE SOLUTIONS

ULTRA LOW POWER STATE MACHINE SOLUTIONS

Learn more about our technologies

State Machine Technology

IoT Solutions
OUR LABS

Highly specialized equipment to provide you with complete solutions.
WHO WE ARE

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

MICROPROCESSORS BELONG IN THE PAST

Besides replacing microprocessors that already exist in products, this proposition includes the replacement of other peripheral electronic components and interfaces in electronic control boards with a single dedicated semiconductor device (ASIC), which emulates the same functionality of the main part of the board but with greater efficiency and lower costs. This innovative type of semiconductor device will form the basis of a new world of possibilities, including local wireless communication with hand-held devices, enabling the implementation of high level interfaces and extending hardware capabilities. Your product will be in line with the latest in cutting-edge technology, the Internet of Things (IoT), allowing you to bring your applications to the next level.
Embedded electronics are available everywhere, from appliances to automobiles that can be used to improve smart cities with mobility and an IoT framework.

However, in most cases, electronic solutions are composed of oversized semiconductor devices that are not compatible neither efficient solution.

Moreover, these semiconductor devices do not offer wireless capability for local or Internet connections.

Von Braun Labs is replacing these old platforms, composed of oversized semiconductor devices not oriented to wireless connections, with a complete and innovative system, enabling a significant reduction in the overall cost of electronic components and the development of evolutionary high level interfaces.

### CHANGING YOUR BUSINESS FOR GOOD

**OLD CONCEPT**

**NEW CONCEPT**

- IoT Cloud
  - Retail Stores
  - Insurance Companies
  - B2B
  - B2C

- Mobile Devices
  - Business Intelligence
  - Instant Reporting
  - Solutions
  - Share Data Amongst Stakeholders

- Databases
  - Hardware Owner Maintenance Support

- Lower Cost
- Ultra Low-Power
- Faster response
- Wireless Connections
COLLABORATIVE TECHNOLOGY IS A KEY FACTOR IN THE VON BRAUN LABS METHODOLOGY

STRENGTHS OF THE NEW PLATFORM

- Ultra-low-power (ULP), State Machine based controller, recommended for applications requiring improvements in battery life
- Custom memory size, with optional high security (AES, 3DES, SHA, etc.) access channels to guarantee data authenticity and secure storage with efficiency and speed
- High-speed processing time as a result of its custom, straightforward paths, including security algorithm execution
- Combines standard (UART, I2C, SPI, USB, etc.) and wireless (RFID, NFC, WI-FI, etc.) interfaces, creating the bridge from peripheral electronic boards to smart devices and simplifying human machine interaction
- Simple and easy configurable interaction with low cost external sensors and controls
- Sensible reduction in the embedded control costs in products in various application areas
- Apps and upgrades available in stores (Android, App Store, Windows Store, etc.)
Beyond IC design, Von Braun Labs creates cutting-edge products through innovative silicon solutions.

Von Braun Labs has a dedicated microelectronics team for Digital, Analog, RF and Mixed-signal Integrated Circuit (IC) design. The team has experience in the entire chip design flow: from the system design and architecture up to the field tests, production support and embedded software development for user applications.

Moreover, the team is able to use several EDA tools on a solid computer network. Innovation, proactivity and focus on the final product are some of the driving characteristics of the team.

In association with local and worldwide industry and academic institutions, the VBL team delivered IPs, patents and chips for consumer, medical, automotive and industrial applications.

Our staff engineers are highly active in the RFID community and some of them are members of the Brazilian Technical Commission ABNT/CE-21:031.07, the GS1 EPC global UHF Air Interface Group and the ISO/IEC JTC1 SC31 working groups. These three committees define the national and international standards for RFID technology developers and users.

OUR DIVERSE ENGINEERING TEAM IS SKILLED IN MANY AREAS

- Digital, Analog and Mixed signal IP design of low-power RFID, cryptographic solutions (ISO 18000, FIPS197, NIST800-38, etc.), power management and embedded interfaces (SPI, I2C, etc.)

- Design of IC blocks implementing control logic, encryption algorithms, serial interfaces, encoders/decoders, BIST, ultra-low-power analog/RF, analog instrumentation/sensing, voltage regulators and reference sources

- VIP development and functional verification of chips and IPs with focus on reusable methodology (eRM, VMM, OVM, UVM based), including mixed signal simulations

- Complete ASIC and IP design flow, from specification, architecture, Design for Testability (DFT), up to full back-end, chip finishing, Automatic Test Pattern Generation (ATPG), FPGA prototyping and bench validation, in several technologies

- Hands-on experience using Cadence, Synopsys, Mentor Graphics, Xilinx, Altera, Mathworks, Micro-controller IDE tools, etc. Development of proprietary common design and evaluation environments (work flow customization and automation)

- RF antenna and PCB layout designs
 Von Braun Labs is experienced in the development of novel & complex solutions, i.e., solutions that involve multiple technologies precisely combined in an efficient and cost-effective, holistic view of the implementation’s innovation framework.

It 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 the like, already developed by VBL to handle each component of the solution, significantly reducing the cost of a system integration, with huge increase of Business Intelligence (BI) over the processes involved.

It is not only the simplification and cost-reduction. The new model allows advanced communication with mobile phones and the whole world of apps on the Internet.
Smart Appliances & Vehicles

Smart interface and control, devices’ management and decision making in appliances and vehicles are being made by oversized micro-controllers at a higher cost in most cases. These devices require dedicated algorithms and have a limited connectivity to the real world.

Our new semiconductor device will cut the costs by around 50%, not only in its own cost but in the cost of putting together other peripheral devices. It also provides for wireless communication.
Although it is designed to fit your needs, it will be much more efficient, solidly based on industry standards, professional patterns, and significantly less expensive.

Von Braun Labs has developed industrial partnerships (foundries and contract manufacturers) in Asia, Europe and in the U.S.A.

<table>
<thead>
<tr>
<th>Main Features</th>
<th>Microcontroller #1 *</th>
<th>Microcontroller #2 *</th>
<th>VON BRAUN LABS Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Consumer</td>
<td>Automotive</td>
<td>All</td>
</tr>
<tr>
<td>Required Memory</td>
<td>8 Kbytes</td>
<td>16 Kbytes</td>
<td>1 Kbyte or less</td>
</tr>
<tr>
<td>Required Speed</td>
<td>8 MHz</td>
<td>48 MHz</td>
<td>2 MHz</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>5.0V</td>
<td>3.6V</td>
<td>1.8V</td>
</tr>
<tr>
<td>Package (Size)</td>
<td>16-pin (SOIC)</td>
<td>36-pin (QFN)</td>
<td>8-pin (QFN)</td>
</tr>
<tr>
<td>Op. Temperature</td>
<td>-40°C to 85°C</td>
<td>-40°C to 105°C</td>
<td>-40°C to 125°C</td>
</tr>
<tr>
<td>Consumption</td>
<td>25μA</td>
<td>70μA</td>
<td>10μA</td>
</tr>
<tr>
<td>Price</td>
<td>~ US$ 5</td>
<td>~ US$ 3</td>
<td>~ 50% less</td>
</tr>
<tr>
<td>Wireless Interface</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

(*) Comparison to micro-controller solutions available in the market today

THERE ARE SEVERAL MICRO-CONTROLLERS IN A SINGLE CAR
ALL OF THEM ARE YEARNING FOR CONNECTIVITY
INFINITE POSSIBILITIES

With our complete solutions, your future opportunities will be endless.
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www.vonbraunlabs.com