# OneSpin Solutions
## Corporate Background 2017

## COMPANY OVERVIEW

Electronic design automation (EDA) supplier OneSpin® Solutions is a leader in formal verification, providing a range of advanced verification solutions for reliable digital integrated circuits (ICs). Leading semiconductor, communications, automotive, and consumer electronics companies rely on OneSpin's formal verification technology as a basis for their own innovative product development to achieve the highest possible verification quality while reducing time to market. OneSpin targets the most difficult verification problems, providing advanced, complete product and service solutions that leverage years of practical experience and close cooperation with end-users. As the only company focused entirely on formal technology, OneSpin's agile, expert R&D and application engineering teams are uniquely qualified to partner with customers to resolve the toughest next-generation verification challenges as they arise. The company is headquartered in Munich, Germany with offices in Silicon Valley and Tokyo, and provides a global distribution and support network. OneSpin's primary investor is Azini Capital of London. The board of directors includes semiconductor industry luminary Jim Hogan.

## MANAGEMENT TEAM

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| Dr. Raik Brinkmann | President and Chief Executive Officer |
| Oliver Habeck | Chief Finance Officer and Chief Operating Officer |
| Dominik Strasser | Vice President of Engineering |
| David Kelf | Vice President of Marketing |
| Dr. Ashish Darbari | Director of Product Management |

## FORMAL VERIFICATION MARKET

The last decade has seen monumental evolution in electronic device sophistication, and continued advances lie ahead. As these devices become increasingly ubiquitous to everyday life, their reliability is paramount and represents the most complex challenge faced by electronics companies. High-quality, efficient hardware verification is a critical element of modern IC design, representing approximately 70% of total electronic development time and resources (Wilson Research 2016). Given the continual increase in IC design size and complexity, traditional simulation-based verification methods no longer scale to emerging requirements. As such, the $1.2B verification market (ESD Alliance 2016) now includes formal verification as a central technology.

Formal-based solutions have accelerated the verification process, increased product quality, and addressed difficult challenges in leading-edge markets, such as automotive. While EDA players Synopsys, Cadence, and Mentor Graphics serve the formal verification market, only OneSpin truly specializes in formal-based solutions.

## PRODUCTS AND SOLUTIONS AT A GLANCE

OneSpin's product line leverages a layered approach to target critical challenges:

- Leading formal verification technology platform for rigorous, high-performance functionality
- Broad range of automated formal "apps" with a high degree of usability to target critical issues
- Packaged solutions with unique capabilities for the toughest verification challenges

OneSpin has invested 300+ development years in its core technology: a state-of-the-art formal platform that serves as the foundation of its entire product line. Multiple formal proof engines, based on public and OneSpin-proprietary algorithms, are applied using built-in heuristics to enable an effective, high-performance verification mechanism. The platform supports not only standard languages such as SystemVerilog and VHDL, but also C++ and SystemC. It enables the use of both SystemVerilog and PSL assertions. The system includes broad ease-of-use features, a comprehensive debug environment, and TCL extensibility. In customer evaluations, OneSpin's formal solutions consistently exhibit greater performance, capacity, reliability, and usability than competitive offerings.

OneSpin's high-value, differentiated solutions include complete products: DV-Verify™ for precise, coverage-driven assertion-based verification; DV-Inspect™ to provide fully-automated design structure and operational analysis; and EC-FPGA™ equivalence checking to improve FPGA design flows. An apps library of multiple automated functions that target known complex issues is also included. Token-based licensing allows for local product remixing to improve the verification flow.

This product line allows OneSpin to provide six targeted solutions:

- A design solution that accelerates and automates early code evaluation
- Comprehensive assertion-based verification with unique observation coverage
- A solution that automates the integration testing of ICs through a range of apps
- The analysis of abstract C++ and SystemC algorithms for high-level synthesis
- Rigorous verification of safety-critical devices to meet the ISO 26262 standard
- Implementation flow validation to improve FPGA quality of results (QoR) and design schedule

In addition to traditional use models, OneSpin offers a cloud-based version of its DV tools and provides LaunchPad™, an adaptive formal platform that allows third-party domain experts to produce specialized apps.

## DISTRIBUTION, PARTNERSHIPS, SUPPORT, AND SERVICES

OneSpin markets its products globally through direct sales channels and distributors. Offices with expert engineering teams are maintained in San Jose, California, U.S.A.; Munich, Germany; and Yokohama, Japan. The company's support network extends to China, France, India, Israel, Korea, the UK, and throughout the USA.

OneSpin's solutions are backed by one of the industry's most knowledgeable engineering teams. A high-touch, customer partnership business model affords a variety of support options, including consulting services. Through the Spinnaker partnership program, fifteen expert verification services providers worldwide have been certified on the OneSpin tool set. In the broader industry, OneSpin partners with leading FPGA providers Altera, MicroSemi, and Xilinx; holds membership in the partnership programs of ARM, Cadence, Synopsys, and Mentor Graphics; and works with other EDA companies. OneSpin is a member of the Accellera Systems Initiative and the ESD Alliance.

## FINANCIALS AND RECENT RESULTS

OneSpin has exhibited substantial annual growth since securing a round of funding from Azini Capital of London in 2012. The company's products are used in the production environments of many leading semiconductor and systems suppliers around the world, including Altera, Bosch, Fujitsu, Hitachi, Infineon, NEC, Nokia, Renesas, Sandia, Western Digital, and Xilinx.

**Contact** · info@onespin.com · www.onespin.com
USA: +1 408 734 1900 · Europe: +49 89 990130 · Japan: +81 3 4530 3865