



TraceWave introduction

TraceWave GmbH is a high-tech startup, based in Berlin. The company was founded in November 2013 by Corné van Puijenbroek and Karin Nowarra-Nadolny.

Corné has 30 years of experience in wireless design and was CTO of several startup companies. He also authored 12 patents and is a serial entrepreneur. Karin has 30 years of experience in the movie industry. She worked as film-editor and line producer and has won several awards. The TraceWave team currently consist of 6 people.

TraceWave has developed a new technology for indoor location without any infrastructure. Our radio nodes measure distance and direction between them. This works both indoors and outdoors, with only two nodes but also with multiple nodes. This is a completely new concept, called relative location. If there are more than two nodes, they will work together and create a mesh network. If one or more nodes is fixed and has known coordinates than all nodes can deduce their own coordinates, this is called absolute location. If one or more nodes has GPS coordinates, all nodes can deduce their own GPS coordinates from that, even when they are inside a building. This is called geo-location. So, our technology can provide indoor-GPS functionality.

The core of our radio nodes is a low-power 2.4 GHz or 5.8 GHz radio transceiver. Our radio signals are different from WiFi or Bluetooth, because they specifically designed for distance and direction measurement. The targeted accuracy is 10 cm at 10 m distance. The maximum distance typically is 300 m outdoor, 30 m indoor (depending on situation). If larger distances are needed, the nodes can use mesh networking or the radio can be combined with a GPS receiver. The radio easily can be implemented as an integrated circuit and will fit in e.g. a watch, bracelet, ID badge or tag. The radio also could be integrated with an existing WiFi radio as an IP block.

The total achievable market for our technology is several billions. We have visualized our markets and applications in the picture below. Because there are so many opportunities, we will address the markets through OEMs, where we will focus on our integrated circuits: "TraceWave inside".

We have identified four revenue streams:

1. Sale of the integrated circuit
2. Sale of modules with integrated circuit plus all radio-related components, for customers with little or no radio expertise
3. Royalties from licensing the IP or patent
4. Sale of Design services, to integrate our technology into products and to tune performance.



We currently are seeking funding to complete the prototype and to design the silicon integrated circuit. The current status of the development is that we are finalizing our prototype, which will serve as demonstrator and as development platform. The prototype consists of a Xilinx FPGA evaluation board and a 2.4 GHz/5.8 GHz software-defined radio. We expect to finish the prototype in the coming months.

So far, over €500.000 has been invested, of which 70% by the founders. For the completion of the prototype we would need up to €300.000. For the silicon development we already have secured a co-investor for €1.500.000 and we are seeking a lead investor for €4.000.000.

For questions or remarks please contact Corné van Puijenbroek, CEO, by phone at +49 157 3656 1483 or by e-mail at cvp@tracewave.com. Some background info can be found at <http://www.tracewave.com>.

