

One for All – Google Glass use along the value chain

Game-changing competitive advantage by deploying Ubimax's industrial solutions xPick and xMake on Google Glass for order picking, assembly & quality assurance



Ubimax, a leading wearable computing company deploys Google Glass at WS Kunststoff-Service GmbH for three productive scenarios: order picking, assembly assistance, and quality assurance. The ingenious twist: the worker is able to perform all relevant business processes with one single Google Glass since the integrated applications “xPick” (order picking) and “xMake” (worker guidance & quality assurance) are running on the same device. Thereby, smooth integration and deployment of Google Glass in different operation areas comes along with cost savings for work equipment, business processes efficiency increase and ergonomics improvement for the worker.

Client Business Description

The Bremen based automobile supplier WS Kunststoff-Service GmbH (WS) is a firmly established innovative company with long-standing customer relationships that always has been looking for new ways to improve its business processes: be it to minimize production errors and cost or to increase the output efficiency as well as usability and flexibility.



Figure 1: Company Logo of WS Kunststoff-Service GmbH

The core services provided by WS are packaging, module assembly, and fixture construction. Further, the company offers sticking of plastic components, post-treatment and automation to its international customers from agriculture sector, consumer electronics business area, and the automobile industry such as Daimler and BMW.

Identifying the business challenges

The pressure on supplier to deliver 1A products is growing parallel to the increasing quality demand on the client site. Heavy penalties and the danger of being replaced by competitors drive the innovation and force companies to eliminate their error rate. Hence, one of the main challenges for WS is the highest possible process assurance – before the assembly process during the order picking, for the entire manufacturing process and the downstream processes such as quality assurance.

Further it is required that low-skilled workers and seasonal workers can be trained fast enabling them to start working quickly and accurately. In peak times it also can be necessary that warehouse workers are able to help out on the assembly line without long instructions, and vice versa.

Since warehouse logistics and assembly processes are among the most promising business areas for efficiency improvement and cost savings, WS decided to prove its pioneering spirit by deploying Google Glass and Ubimax's solutions for three core processes within these areas: order picking, assembly and quality assurance. All these processes are now per-

formed with Google Glass and industrial smart glasses solutions xPick and xMake provided by Ubimax GmbH.

“We aimed for an integrated solution that can be used across different business processes – Ubimax and Google were able to deliver!”, states Wassim Saeidi, Managing Director of WS and continues, “The main challenge was to assure that a worker is equipped at the right time with the right tools and appropriate information enabling him or her to work efficiently!”

Smart glasses optimized industry solutions xPick & xMake

WS now deploys the market leading pick-by-vision solution xPick with Google Glass for its order picking processes. Thereby, the worker logs in with his or her user profile and the picking steps are displayed directly via an intuitive graphical user interface, showing the worker what to pick. The pick step confirmation can either be done by gesture control or voice commands. Once the pick step is done correctly / is confirmed, the information is saved in real-time in the Warehouse Management System (WMS) and the next pick step(s) appears on the display.



Figure 2: Order picking with xPick and Google Glass

After the picking process is accomplished successfully, the worker starts the downstream assembly process. By registering the assembly item's individual QR-code card, the step-by-step worker guidance is initiated, explaining the steps to be performed via the Google Glass see-through display. Thereby, the sys-

tem allows a worker e.g. to pick at one day and to perform assembly on the next day.



Figure 3: Assembly process with xMake running on Google Glass

During the assembly process at WS, Google Glass is communicating with various external sensors on the smart assembly line that has been designed and implemented by Ubimax:

- **Scales:** high-resolution scales identify if the correct amount of assembly components has been taken and shows subsequently the next step on the display
- **Light sensor:** infrared sensor recognizes if a building component has been fixed in the construction jig and sends the confirmation to Google Glass – next assembly step appears in the display
- **Buttons:** buttons on the assembly line are used for emergency stop and to pause the assembly process
- **Video object recognition:** An intelligent camera system recognizes if the assembled modules are packed into a flexible pocket box and initiates a new assembly process on the Google Glass

The quality assurance process already begins during the assembly. The worker is asked via the Google Glass display to check the quality of single parts and to perform the final IO test. However, the subsequent quality assurance process leads the worker through predefined process steps allowing him to communicate back any quality issues in real time to the main system, e.g. ERP. The conduction of the quality assurance steps is documented as proof point for WS's customers.

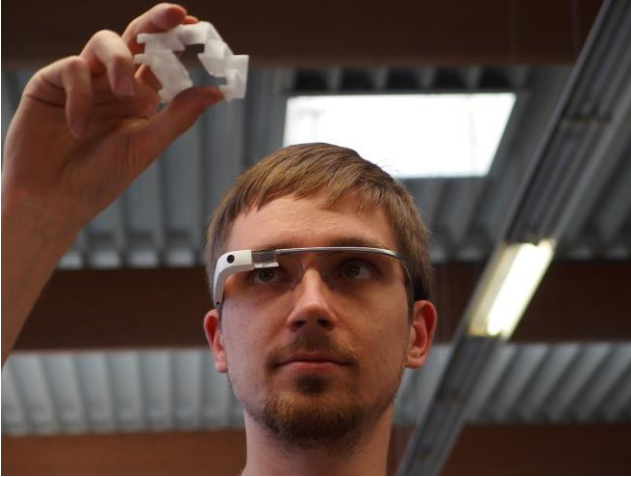


Figure 4: xMake – quality assurance with Google Glass

Application capabilities & benefits

The cross-process deployment of just one single hardware device for different use cases implies nothing less but a paradigm change within the business value chain. With Google Glass and Ubimax's industrial smart glasses solutions the need for changing the working tool between consecutive processes is eliminated and the worker is able to perform different tasks with just one multi-functional tool.

"Google Glass is the multi-talent tool that perfectly fits to our industrial applications – it combines all the required technical features with state-of-the-art design and usability!" states Dr. Hendrik Witt, Managing Director of Ubimax GmbH. However, the latter is crucial for user acceptance and successful change management during the implementation process.

The revolutionary highlight of the Ubimax solutions running on Google Glass is the ability to deploy one single device for different use cases just by switching the application without the need to take off the device. This not only comes along with cost savings for hardware devices and time savings for the superfluous tool changing process – it also brings future-proof and stable connectivity and stability since all systems are running on the same framework.

All together it marks an important milestone on the way to the Industry 4.0 and Smart Factory that are characterized by adaptability, resource efficiency, connectivity, and ergonomics. And the investment quickly pays for itself: already after a short time period WS could achieve an remarkable KPI: "With Ubimax's xPick and xMake solutions running on Google

Glass we were able to reduce the customer complaint rate down to almost zero percent!", enthuses Wassim Saeidi about the outstanding performance of the game-changing solution.

To summarize, WS benefits from the following key characteristics of xPick & xMake running on Google Glass:

- **Higher speed:**
 - Quick ramp-up for new employees due to intuitive working step visualization
 - Higher worker performance due to fatigue-proof work flow design
 - Ergonomic hands-free working
- **Fewer Errors:**
 - Intuitive graphical instructions can be optimized for the individual skill set of the worker
 - Additional modules and sensors such as scales, light sensor and voice control help to further reduce error rate and increase the process reliability
 - Accurate work due to high user acceptance and ergonomic system design
- **Greater flexibility:**
 - Easily adaptable to changes in the warehouse environment and assembly line processes due to configurable workflow
 - Possibility to combine different output devices for optimal workflow design
 - Smooth deployment and integration into existing systems with clear roadmap for Augmented Reality technology

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About Ubimax

Focus of Ubimax GmbH headquartered in Bremen is on solutions in the area of wearable computing - from customer specific software developments to standardized industrial solutions like "xPick" ("eXact Picking" pick-by-vision solution) or "xMake" ("eXact Manufacturing" make-by-vision solution).

xPick and xMake provide you higher speed, fewer errors and greater flexibility for your processes. An innovative graphical user interface, flexible combinations of smart glasses and tablets as well as optional add-on modules like barcode-scan, voice-confirmation, counting scales or navigation are key features of the solutions. The architecture allows for seamless integration into your existing IT landscape and is future proof with regard to augmented reality.

Ubimax is a full service provider along the whole value chain of wearable solutions, starting with the initial consulting tasks, followed by software design and development and eventually on-site implementation, maintenance and support.

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