



serial-tested modularity
x2x-usability
smart farming ready

Success built on cooperation



The CAB Concept Cluster, founded 2014, consists of a group of experienced OEM suppliers, the Technical University of Dresden as well as various associations and partners. Focus of the cluster is on manufacturers of Construction, Agricultural and Industrial trucks, and its aim is to concentrate innovative solutions into joint projects and demonstrate the potential of efficient system integration.

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Combined strengths for customers success

The CAB Concept Cluster, founded 2014, consists of a group of experienced OEM suppliers, the Technical University of Dresden as well as various associations and partners. Focus of the cluster is on manufacturers of Construction, Agricultural and Industrial trucks, and its aim is to concentrate innovative solutions into joint projects and demonstrate the potential of efficient system integration.

„At bauma 2016 with the Genius CAB, we were able to demonstrate how a customer-neutral platform can combine innovation and customer value on basis of a wheel loader cabin“, said Jun.-Prof. Dr. Jens Krzywinski from the TU Dresden. „The Concept was enthusiastically received by the customers and won several awards.“

The CAB Concept Cluster is now pursuing this requirement with its new Smart CAB, which was presented at Agritechnica 2017 for the first time.

Based on a multifunctional cab for self-propelled vehicles such as harvesters and field sprayers the integrated innovations show how today's and future agriculture-specific needs can be answered to.

“We are not generating innovations for their own sake,” says Mag. Michael Aichinger-Rosenberger, Head of Research & Development and member of the Executive Board at HELLA Fahrzeugteile Austria GmbH, “we transfer major trends such as serial-tested modularity, x2x-usability and smart farming into real added value for our customers: flexibility, future reliability, and profitability.”



Focus Open 2016 Gold



Verband der Baubranche, Umwelt- und Maschinentechnik e.V.
VDBUM-FÖRDERPREIS FÜR HERAUSRAGENDE PROJEKTE 2016

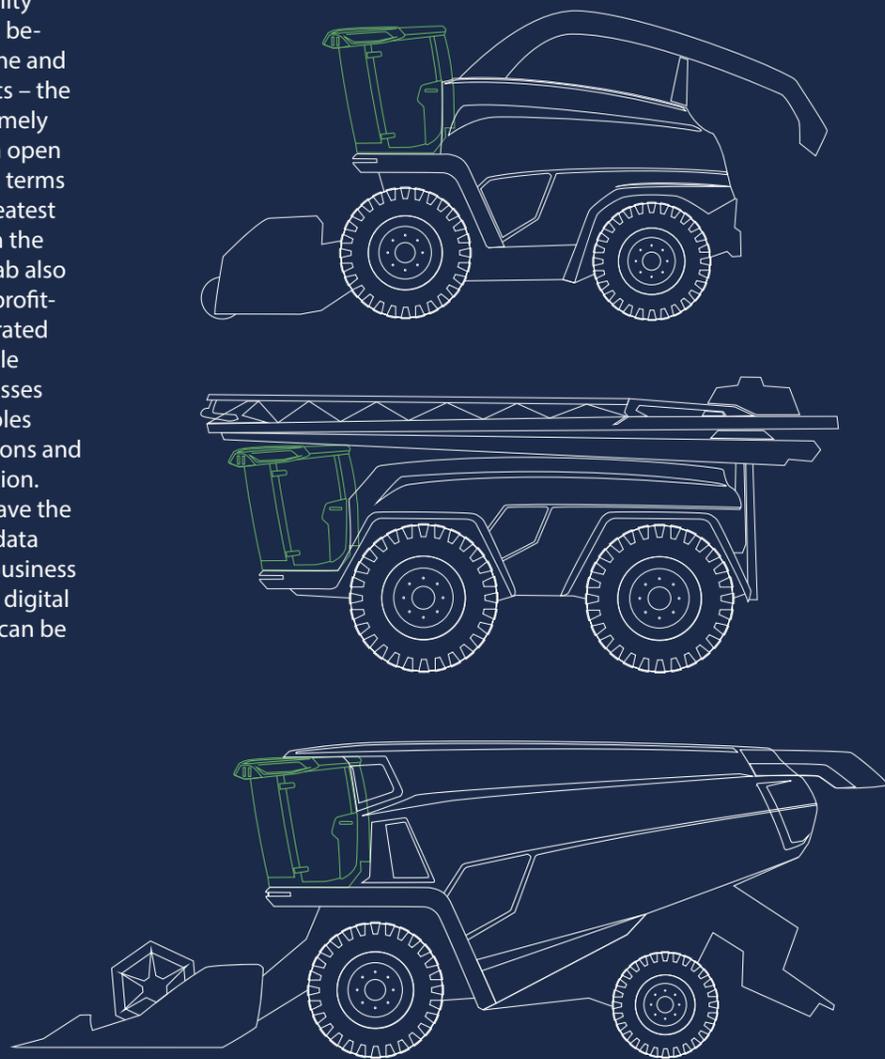


Near start of production & innovative: The Smart CAB at a glance

Flexibility has become a key notion in development and production today. For the Smart CAB, serial-tested-modularity is therefore a key component of the cab concept. All indicated innovations are near start of production or have been serial-tested, can be flexibly combined and adjusted to various machine types.

For enabling maximum x2x-usability – whether it be in communication between driver and machine, machine and cloud or among other components – the Smart CAB operates with an extremely performative CAN structure. As an open system, it knows no boundaries in terms of connectivity, thus providing greatest future reliability. For application in the areas of smart farming, the new cab also shows the way forward, whereas profitability is the focus here. The integrated CCU connectivity unit sends vehicle data to a backend server and accesses the Bosch Feature Store. This enables downloading new machine functions and features also after start of production. Manufacturers and farmers also have the options to share generally useful data and use them profitably for new business models. In general, many IoTs and digital products by other manufacturers can be flexibly integrated.

“Looking into the future always means playing with ideas. The Smart CAB bundles ideas that clearly benefit users,” concludes Fritz Schadeck, Vice President at FRITZMEIER Cabs. “We are going to show these ideas at Agritechnica 2017 like a firework of innovations whilst still focusing on the vital subjects such as safety or driver comfort.”



Max-Joseph Essendorfer,
agricultural master and instructor at the vocational training center DEULA Bayern GmbH:

„Projects such as the Smart CAB contribute to the cab as a workplace combining practical connectivity and easy user-oriented handling. These framework conditions help us applying our experience and knowledge in a targeted and efficient manner. As consequence, working is more fun again despite long workdays.“



Claus Ammer,
CEO of DEULA Bayern GmbH/Akademie Landschaftsbau Weihenstephan GmbH

„Participating in a development project such as this is something very special to us at DEULA. It fills us with pride that we can contribute with our theoretical and practical know-how. It is furthermore important to us being able to integrate new and innovative agricultural technology into our practice-oriented training process. The many new contacts provide a broad spectrum for a close collaboration.“

Jan Gumpert,
CEO of Agraset Agrargenossenschaft eG

„From our perspective and depending on the conditions, the agricultural machinery industry must prepare itself for smaller areas, larger companies and more changes in machinery operators. Important in the cabs are therefore e.g. compact control, safety functions such as a 360° surround view or fatigue alerts as well as smartphone-coded personalized keys. The topic of comfort should definitely not be neglected throughout.“



serial-tested modularity: flexibility in pure form

Reduced: Development periods and costs.

The sticking point of many cab projects is the costs resulting from development. The Smart CAB is therefore considered a highly innovative kit with modules, that can be freely combined and adjusted to the requirements of the respective user or machines. A flexible playing field for the design of new machines saving time and costs for completely new developments.

Low-risk: Serial implementation.

Following the development phase, serial implementation is possible at calculable risks. For all innovations are at least near start of production. This for example includes the Smart Matrix Worklights (HELLA), the Operator System (GRAMMER), the Easy Fit Surround View System (Bosch) and an operating element with climate control (AURORA). The cab's steel structure, including substructure groups, such as glazing and cladding parts, is based on a serial-tested product by FRITZMEIER.

On top (1): Consequent system integration.

The number of functions in modern agricultural machinery increases while cab space remains limited. A clever combination of desired functions therefore always requires a high level of system integration. An example here is the cab roof of Smart CAB, combining climate control, all electronic components and bird's eye view camera (Bosch). Sensors can be equipped with a HELLA cleaning function, regularly removing dust or dirt from e.g. cameras and mirrors using air or water. The installed interior airflow also shows the characteristics of smart system integration.

On top (2): Individual design.

The Smart CAB design transports the customer benefits of modular system integration via an integrative configuration. Through the intelligent interaction of all components, Lumod and the Technische Universität Dresden generate a coherent and unique appearance, which can be adjusted to the individual requirements of individual customers according to a multifunctional approach. While Lumod is responsible for exterior design, TU Dresden is in charge of interior design and the interface. Embedding their design into the visionary overall concept of the cluster underlines sustainability and a holistic approach. Customer-specific LED lighting solutions are a further component of the individual design. HELLA Styling Lights installed in the Smart CAB can generate brand-specific vehicle appearances that increase the recognition factor. Customer-specific solutions can be implemented here, where desired.



Styling Lights can also leave a mark inside the vehicle. HELLA uses a further branding element via a flexible luminescent material illuminating the logo integrated into the GRAMMER headrest.



The Smart CAB is based on a serial-tested product (FRITZMEIER) integrating all CCC innovations. The modular design ensures flexible operational capacity for different vehicles. For the customers, this means: great quality, low development and equipment costs and quick production start without risks.



- 1 AURORA integrated twin radial blowers
- 2 HYDAC spring damper elements
- 3 Bosch object recognition system
- 4 HELLA integrated Smart Matrix Worklights
- 5 FRITZMEIER modular handle
- 6 HELLA Styling Light
- 7 AURORA aluminum heat exchanger
- 8 MEKRA Lang mirror replacement camera



x2x-usability: Future reliability in pure form

In essence: The CAN connectivity.

Compared to the Genius CAB, Bosch has installed an even more powerful body computer into the Smart CAB. It has a greater capacity and CAN, LIN, analog as well as digital interfaces. The connectivity of all components provides a great number of distributed and interlinked functions in the displayed Smart CAB version. Additional or new CAN-capable components can be easily integrated into the network. The vehicle as such can also be easily connected. The Smart CAB is thus fit for the future in all directions. Driver, machine, cloud, drone and all other components interact flawlessly thanks to perfect x2x-usability.

Dr. Johannes-Jörg Rüger, President Sales and System Engineering Commercial Vehicle and Offroad Business (CVO/P) at Robert Bosch GmbH, says: „Thanks to high-end components and system know-how, we make the agricultural machine workplace more efficient and comfortable while providing our customers with cost-efficient solutions. The example of the Smart CAB allows us demonstrating the connectivity of complex sub-systems. By integrating innovative sensor systems and actuator units, we lay further groundwork towards smart farming.“

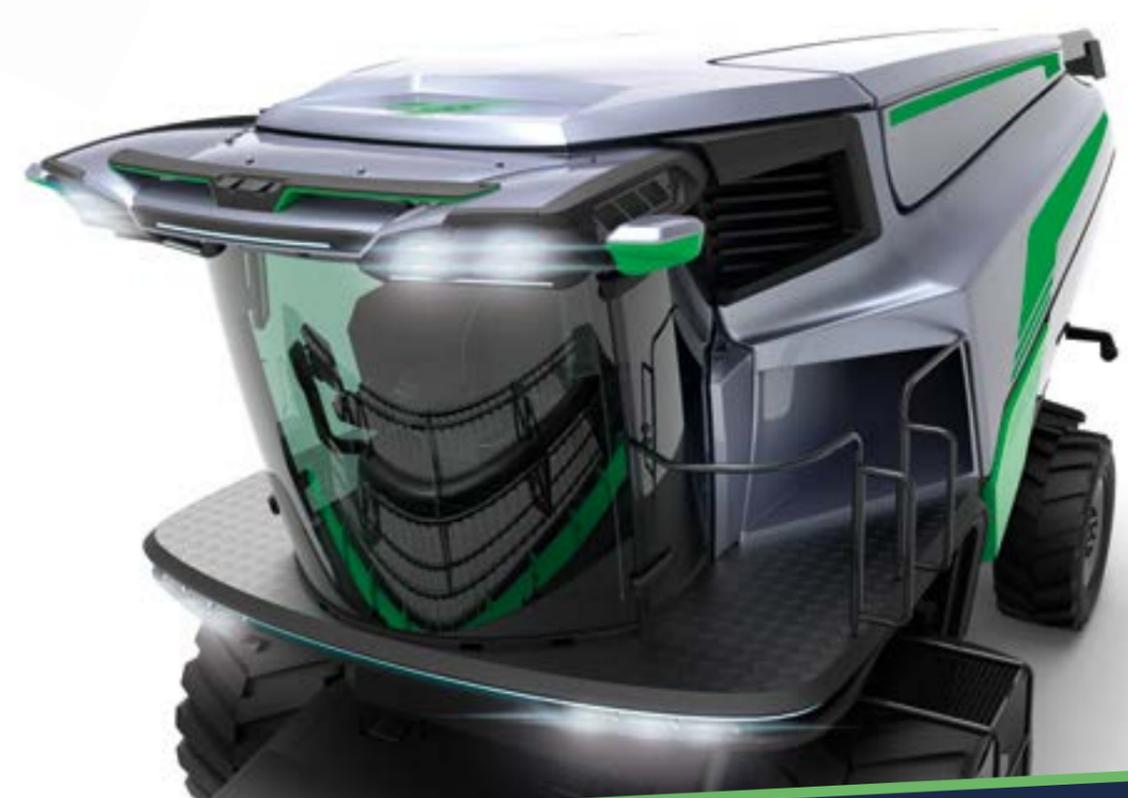
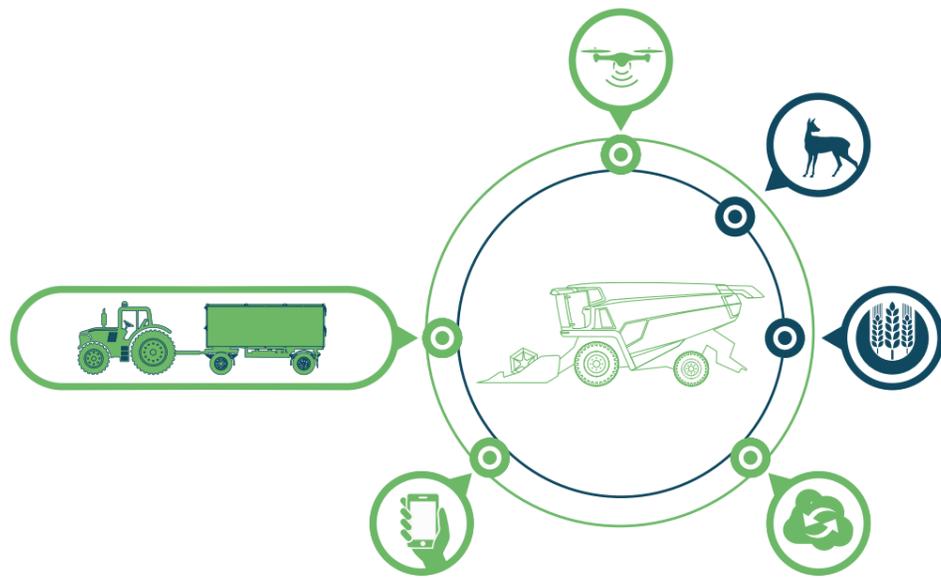
At the control panel: The driver and the user interface.

More connectivity creates significantly more efficiency and performance, but also imposes much more complex demands on the user. A user interface facilitating the communication with machines and other components and conceived across systems is therefore a key operator system component. The clear user surface of the GRAMMER touch terminals inside the Smart CAB combines all key parameters, thus enabling safe navigation during

all work situations. 360 visualizations, digital mirror replacement systems and a new status panel gives the driver unique control over the machine and process parameters as well as the entire machine environment. The presentation can at all times be adjusted as needed.

Who is speaking? From smartphones to drones.

To show, what x2x-usability looks like in practice, the Smart CAB illustrates the integration of a smartphone (Bosch/TU). The use of drones could also provide significant added value with regard to safety and comfort. In connection with a camera, they can provide the farmer with a comprehensive picture regarding the condition of plants and warn objects in the environment, thus also protecting them. The Smart Matrix Worklights by HELLA communicate with the Bosch object recognition function, the eye-tracking camera or the light reference sensor by HELLA, therefore preventing glaring others and the driver.



smart farming ready: Profitability in pure form

Bosch Feature Store: Using smart data profitably.

The Feature Store is a platform allowing OEMs and vehicle operators to set personalized smart farming functions, which can then be uploaded directly to the machine. This can lead to a significant added value of existing systems or, for example, in combination with an accessory equipment, significantly increase their functions. In the application example for the Smart CAB, farmers can upload vehicle settings adjusted to particular soil/field and/or environmental conditions as well as accessory equipment, then make those available to other farmers against commission.

Smart user elements for more productivity.

Making the driver's job as comfortable as possible is not merely an end in itself – smart user elements save time and reduce error sources. GRAMMER follows this principle with its multifunction armrest (right) equipped with a 12" multi-touch central display. As part of the GRAMMER operating system, it controls the seat and all vehicle and cab functions. For better oversight, an additional GRAMMER comfort display was installed in the cab roof controlling functions such as climate control, lighting, etc.

Alternatively, it is possible to install a diagnostics-capable user element by AURORA for climate control. The GRAMMER joystick allows the control of horn, grain tank, reel and attachment functions, machine speed, cutting system as well as auto-pilot. A mini wheel integrated into the left armrest controls the machine.



On Top: Even more control thanks to ELD.

The agricultural engineering industry also has an answer to the head-up displays in the automotive field: so-called electro-luminescence displays (ELD). FRITZMEIER has integrated an ELD in the Smart CAB displaying selected information or warning messages in the windscreen area without adversely affecting vehicle views.



- 1 Bosch Feature Store
- 2 GRAMMER comfort display
- 3 ELD display
- 4 GRAMMER central display
- 5 GRAMMER Mini Wheel

Safe, of course: From lighting concept to 360° visualization

Sophisticated lighting concept.

In connection to the installed Bosch object recognition, the Smart Matrix Worklights by HELLA minimize the glaring effect for other vehicles on the field, as it enables dimming down individual segments. With its light reference sensor, HELLA reduces auto-glare for the driver via dust and auxiliary equipment. For 100% line-of sight illumination, HELLA's roof-integrated eye-tracking camera follows the driver's line of sight and dims the non-observed surrounding. Around the speakers, HELLA has arranged four RGBW rings as interior lighting. These can be used as collision warning. Via projection, HELLA enables the possibility of 360° communication via light. Logos or warning signals can be projected onto the ground to optically raise awareness to other vehicles or passers-by. It is also possible to optically delineate work areas, e.g. by visualizing a red stop line for a tank truck.

Perfect visibility.

Thanks to tinting foil integrated into the laminated glass (in German: VSG), FRITZMEIER ensures that windscreens react to solar radiation intensity through dimming.

Inclination sensor technology par excellence.

Many applications require calculating tilt angles for ensuring safe machine and equipment functioning while controlling processes. The functionally safe inclination sensor technology by HYDAC provides outstanding dynamics. It is therefore particularly well-suited for the active orientation, stabilization and tilt control of booms, auxiliary equipment and the entire mobile work machine. Thanks to movement compensation, tracking errors occurring in dimmed and/or low pass-filtered systems can be averted. The driver can retrieve this information on the central display in a clearly visible manner and will receive a clear warning in case of danger.

Comprehensive 360° visualization.

The camera lens of the VISION 4.0 system by MEKRA Lang replaces various mechanical mirrors. The high-resolution HDR cameras provide a clear image on the display and thus add significant view during day and night. The legally required fields of view (EU Mother Regulation 167/2013) are exceeded easily and provide clearly improved safety and ergonomics during everyday operations. With regard to possible mounting positions, the system is highly flexible, robust and resistant (IP69K).



HYDAC inclination sensor



Bosch's ultrasound sensory system furthermore takes care of the near surrounding. It alerts to dangers directly in front of the vehicle. The Easy Fit Surround View System by Bosch also provides an excellent 360° view. The GRAMMER central display shows the individual images of the four surround view cameras as well as the 360° top-view, depending on the settings. The object recognition camera by Bosch also recognizes static and moving objects in front of the vehicle. It alerts the driver on the HMI as the camera recognizes the object, marks it and displays its speed and distance to the cab. The objective consists in creating a further milestone regarding safety and paving the way towards smart farming.



Comfortable, of course: From ergonomics to climate control

The operator system as workplace: operator ergonomics à la carte.

The GRAMMER operator system provides an all-round carefree package of operator ergonomics at the workplace. Adjustments to the driver seat occur electronically via the display and the memory function can remember all settings. The seat is climate-controlled and is equipped with a massage function; the 3-point belt is height-adjustable. The newly developed joystick also provides optimal comfort thanks to horizontal hand position and ergonomically positioned user keyboard. Depending on preference, individual user elements can be combined into a tailor-made user interface.

Adaptive cab suspension.

The modern, hydro-pneumatic cab suspension system by HYDAC isolates the cab from the vehicle frame via vibration control in order to reduce full body vibration strains (acc. to EC guideline 2002/44/EC). It is dynamically adjustable to application area, vehicle speed, stirring angle and transversal acceleration – a clear plus in user ergonomics, comfort and productivity. Thanks to the great system quality, damping values almost equal those of an active suspension. The cab suspension can be individually configured via the central display.

Unloading camera and display.

Should the driver have to check the filling level when overloading, this has previously been a tiresome, time-intensive and physically straining task. One look into the vision system by MEKRA Lang, consisting of a monitor and an unloading camera, makes exiting the cab for checking unnecessary. At the same time, the transfer vehicle can be optimally loaded. This results in comfortable working conditions and greater efficiency.

Air conditioning de luxe.

The many different climate zones across the world require drivers to face extreme conditions during harvesting. Optimal climatic comfort ensures more convenient working conditions and efficiency. AURORA uses a powerful blower for ventilation, heating and air conditioning in the Smart CAB. Soldered flat tube heat exchangers and evaporators in aluminum provide ideal climatic conditions in the cab. A pressure-resistant electric window water valve adjusts the air-conditioner's heating performance within a very short period. The climate operating element Aranea² with integrated climate control uses temperature sensors and a Smart CAB-coordinated software for meeting the driver's climate comfort demands. The driver can make adjustments either through the AURORA user element or, alternatively, the GRAMMER comfort display. The optimally placed and visually appealing AURORA vector and round nozzles enable multi-zone climate control inside the cab and ensure frost- and fog-free windows. The S.M.A. components constitute an additional key element of the efficient air-conditioning system: high-density AC-hoses and -pipes provide a safe and virtually lossless refrigerant transport between the individual aggregates, reduce pollution and enable savings due to longer refill cycles. The Internal Heat Exchanger furthermore increases the air-conditioning's effectiveness by about ten percent, resulting in less gas consumption and reduced toxic emissions.



HYDAC adaptive cab suspension



- 1 AURORA round nozzle
- 2 GRAMMER comfort touch display
- 3 AURORA climate-control operating element
- 4 AURORA vector nozzle
- 5 HELLA Interior Light
- 6 MEKRA Lang unloading display
- 7 GRAMMER joystick
- 8 GRAMMER seat with illuminated logo
- 9 GRAMMER Mini Wheel

Partners in detail: Strong minds, strong results



„As co-founder and project manager of the CAB Concept Cluster, we assume our role as innovation leader. We are in constant know-how exchange with our cluster partners. In the Smart CAB, we ensure that on the basis of a serial product, we achieve the greatest possible degree of component integration, both electrically and mechanically. This results in maximum connectivity and modularity and allows us to remain true to our tradition and aspirations of implementing state-of-the-art technology in cab production for achieving added customer value. We also put great store by the trends of safety, ergonomics and driver comfort.“

Fritz Schadeck
Vice President | FRITZMEIER Cabs



„In collaboration with our cluster partners and as co-founder of the CAB Concept Cluster, we aspire to develop high-tech concept cabs for OEMs in the construction and agricultural machinery industry. We believe that Genius CAB and Smart CAB both, provide answers to the central market challenges as they offer the opportunity of a speedy market implementation at reduced costs and limited risks. As lighting and electronics expert with more than 100 years of experience, we contribute high-performance lighting solutions for more efficiency and safety as well as a cleaning function that can be integrated into sensors in order to clean e.g. mirrors or cameras from dirt. Our projections create the opportunity for communication with the surrounding area. This enables for example projecting warning signals onto the ground. Our LED lighting solutions also provide an outstanding design element allowing for customer-specific adjustments.“

Ing. Robert Laschober
Director Global Sales Agricultural | Turf and Utility Machinery | HELLA



„Success built on cooperation – the CAB Concept Cluster exactly expresses why we at AURORA are a part of this. The close cooperation among the partner companies resulted in central innovations for modern driver cabs. The cluster-generated synergies have resulted directly in technical and commercial advantages for our customers. We - as heating and air-conditioning system and component specialist - have installed a highly efficient air conditioning in the Smart CAB. Due to the demanding and regionally extreme application conditions, it is a main comfort feature inside an agricultural vehicle cab. The Smart CAB also allows us presenting a diagnosis- and CAN-capable user element. It contributes additionally to its user-friendliness and analyzes service-relevant information for e.g. displaying the impending necessity for servicing.“

Thomas Banschbach | Key Account Manager | AURORA



„S.M.A. Metalltechnik addresses not only agricultural technology but also renowned suppliers for passenger car and truck manufacturers. This overlapping experience helps us define our task in the CAB Concept Cluster as one of contributing to its overall success with regard to process safety, quality and engineering solutions. Each detail counts here, no matter how deeply buried it is inside the system. Our professional qualification is in the field of refrigerant pipes. For the Smart CAB, we have decided on an high-performance interior heat exchanger providing very clear advantages as part of the performative air-conditioning system: more climate comfort inside the cab while simultaneously reducing gas and CO2 emissions.“

Dipl.-Ing. (FH) Frank Söhnle | Head of Development | S.M.A. Metalltechnik

Partners in detail: Strong minds, strong results



„90,000 people (as of December 1, 2016) work on Bosch Group products and services around the globe for improving the quality of life of humans. We pursue our aspiration „Technik für's Leben“ („Technology for Life“) as an internationally leading technology and service company. With its input to the Smart CAB, Bosch underlines its commitment towards contributing more to innovative technologies and solutions in agricultural technology. We will use our system competence for significant and sustainable advance process automation in the agricultural industry – from automated driving to automated work processes.“

Mathias Berger | Agriculture Division Head
Robert Bosch GmbH



„MEKRA Lang is specialized in developing and producing vision systems precisely tailored to the respective application case and customer. In association with the CAB Concept Cluster, we succeed in combining these optimally while presenting them in an overall concept. In the Smart CAB, we present an electronic mirror replacement system for agricultural machines, which constitutes a significant advantage to the driver with regard to vision and ergonomics. Already when developing new products, we're focusing on detecting future farmer needs through comprehensive field tests in the region. We're therefore often much quicker with our market introductions than the legislator with its introduction of new guidelines.“

Stefan Heini | Account Manager OFFROAD | MEKRA Lang



„Efficient system integration and the utilization of synergy potentials experience increasing importance when it comes to customer projects. Insofar, the CAB Concept Cluster is part of our future-oriented product strategy. With regard to the cluster's innovations, our focus is equally the agricultural technology industry and the machine users as we believe they are central aspects for market success. This thought constitutes also the core of our operator system. It makes an impression thanks to its ergonomic driver seat including massage system and memory function for its seat adjustment, a newly developed joystick for comfortable control as well as a multi-function armrest as basis for a custom-made HMI. The development of user-oriented innovations according to ergonomics, comfort and safety is our focus. Our comprehensive expertise in the area of agricultural technology accumulated over decades as well as our modular product program allows us to find specific solutions for all application areas.“

Marko Boving
Senior Manager Strategic Product Planning | GRAMMER AG



„For us, the special quality of the CAB Concept Cluster consists in the joint development of innovative ideas, which can then be competently implemented thanks to the strengths of the various Cluster partners. Such a collaboration is very effective and very rewarding to customers. As specialist for industrial and mobile hydraulics, we have developed a dynamic system for measuring, stabilizing and controlling the tilt angle of the Smart CAB – a significant factor for ensuring the safe functioning of mobile work machinery. Movement compensation allows avoiding tracking errors occurring in damped and/or low pass-filtered systems. These technologically advanced systems enable us at HYDAC to serve the increased demands for specialized agricultural machines.“

Josef Schmidbauer | Head of Mobile Marketing | HYDAC



Partners in detail: Strong minds, strong results

Lumod

„The Lumod GmbH, headquartered at Gut Obermühle in Baiern near Munich is specialized in strategic design. Among the design agency’s core customers are large international corporations and SMEs as well as startups in the areas of capital goods, consumer products and pharmaceuticals. Lumod understands design holistically as highly successful instrument of brand management and development. Starting with the product as most important communication carrier of the brand values, we create a tailor-made, harmonious and coherent brand image – as is the case when designing and configuring the entire CAB Concept Cluster presence. After the Genius CAB presented at BAUMA 2016, the focus is currently at the Smart CAB. Consequently applying the principles of system integration and modularity, we created maximum brand performance in a most efficient manner, which has been further increased thanks to its consistent implementation in the Mediapool.“

Wanja S. Steinmaier
Managing Director | Lumod GmbH



SYSTEMS+COMPONENTS®

“As specialized fair under the umbrella of Agritechnica, we support exhibitors for systems and components in agricultural technology and related industries. The CAB Concept Cluster perfectly reflects our guiding theme – the integration and interaction of modules in mobile applications. On modern, highly complex systems, a great number of mechanical, hydraulic, electrical and electronic components must be coordinated. „Connectivity“ is a prerequisite – not only among components but also between people and companies. We’re therefore glad that the world premiere of the Smart CAB will take place at the Agritechnica 2017.“

Dr. Raffaele Talarico | Project Management | Systems & Components

AEF

AGRICULTURAL INDUSTRY ELECTRONICS FOUNDATION

„We promote and develop synergistic connections between companies. Increased application of electrics/electronics and the data exchange between machine and customer shall simplify work and bring economic benefits to agricultural customers. The integrated innovations in the Smart CAB make exactly this possible. Close cooperation with our partners is very important for us and we are looking forward to support the Cluster with our know-how and experiences. Together we can shape the future of agriculture.“

Norbert Schlingmann
General Manager | AEF – Agricultural Industry Electronics Foundation

TECHNISCHE UNIVERSITÄT DRESDEN

„Our focus is situated on the integrative overall cab concept as foundation to an effective HMI. The product experience is a central notion for us throughout. Against this backdrop, the Smart CAB shows up the potentials when in-depth technological connectivity encounters the challenges of digitalized systems. These lead, among other things, to the transfer of operator and monitoring tasks away from driving and towards process management. In the Smart CAB, we counter the increasing complexities of permanently retrievable process and machine functions with the necessary information at the right time and place.“

Jun.-Prof. Dr.-Ing. Jens Krzywinski
Junior Professorship for Technical Design | Technische Universität Dresden



DEULA BAYERN

„Our mission as vocational training center has for many years consisted in enabling a nationally standardized agricultural, environmental and municipal vocational training. Now more than ever before, it is important to identify trends early and integrate them into our program. The collaboration with the CAB Concept Cluster provides great advantages for both sides: thanks to the experience of our technical instructors, our training participants and apprentices can contribute to the Cluster precious knowledge regarding specific machinery usage. At the same time, the close cooperation with the industry enables us to use state-of-the-art machinery and devices during training – alongside relaying professional skills, this is a central aspect for our students to master future challenges.“

Claus Ammer | Management Board | DEULA Bayern GmbH

Partners in detail: Strong minds, strong results



„Emblivity GmbH focusses on future-oriented software solutions aimed at Cyber-Physical (Production) Systems, where the realization of reasonable user interfaces is a major milestone in the successful transition to Industry 4.0 and the core business of Emblivity GmbH. As supplier of the Smart CAB Emblivity GmbH supported the user-interactive applications for both HMI Displays, Center and Comfort, and the integration of these displays with the numerous components of the Smart CAB.“

John F. Schommer | Managing Director | Emblivity GmbH



„The InMach Intelligente Maschinen GmbH is a developer and manufacturer of smart control and assistance systems for commercial vehicles. In the context of the Concept CAB project we supported with Engineering services.“

Johannes Bosch
Senior Development Engineer Driver Assistance Systems in Commercial Vehicles
InMach Intelligente Maschinen GmbH



„Beneq® is a leading supplier of Atomic Layer Deposition equipment and thin film coating services, and the world's premier manufacturer of thin film electroluminescent displays. Beneq's Lumineq® displays are the most transparent displays in the world and in addition to conventional dashboard applications the displays can be laminated in-glass or on-glass to improve safety and ergonomics of vehicles. Together with FRITZMEIER, we integrated an ELD (electroluminescence display) into the Smart CAB, which displays select information or warning messages in the area of the windscreen, without however adversely affecting vehicle vision.“

Thomas Koch
Area Sales Director | Display Sales in Central- and Southern- Europe | Beneq



„Vision Systems is a tier-one system supplier in the aeronautic, land transport and marine industries, developing bespoke innovative solutions for improved comfort, costs reduction and heightened safety. As an expert in shading solutions and following the establishment of Smart Lite last year, a new division devoted to the design, production and commercialization of dimmable systems, Vision Systems provides the Smart Cab with a dimmable sun visor integrated into the windshield. The smart solution turns from clear to dark automatically (manual override control provided) to protect the driver from sun glare without blocking the view, ensuring optimal visibility. Together with FRITZMEIER Vision Systems has installed a foil into the Smart CAB, which reacts to solar radiation and provides automatic dimming. The driver is thus protected and optimal vision ensured.“

Frederic Arbaudie | Smart Lite Sales Director | Vision Systems

