From roda basics to Tempest ready

All electrical units emit electromagnetic waves, especially computer screens, input devices or non-shielded data lines.

These electromagnetic fields may contain information which is received, evaluated and displayed, with suitable receivers, over distances of more than 100 m. This means, that a "listener", who is in a vehicle nearby, would be able to reconstruct information displayed by the computer via radiated waves, e.g. from video signals and keyboard entry.

In addition to the radiated electromagnetic waves, the compromising information can also be contained in data and power lines.

This related information can be read and duplicated without a corresponding filtering of the devices or buildings, equivalent to the electromagnetic waves.

Therefore, the national security authority BSI recommends in its catalogue of measures "IT basic protection" - the use of protected IT components according to the zone model for these sensitive areas.

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roda has many years of experience in the protection of rugged laptops in accordance with Tempest Zone 1 (equivalent to NATO SDIP 27 Level B (ER)). Over a period of 10 years, more than 1,000 Rocky® RK7 - RK10 notebooks were delivered in this version to the German Bundeswehr.

The royal class was achieved in 2013 with the zoning and approval of the fullyrugged Rocky® RK9, in the version SDIP 27 Level A, by the national security authority, BSI. Based on this success and the resulting high demand for tempest devices, the product range of robust Zone 1 devices was further expanded, in co-operation with long term partners.

Thus, five rugged laptops in sizes 13" - 17", the Panther series of tablets, various DC/DC voltage converters, the mission modules for the mobile server Lizard® RW11, three robust displays in sizes 15" - 21", rugged switches and roda-modified third-party computers are now available on the market as zoned products.

Picture 1: Sealed and opened interfaces of a SDIP 27 Level A Rocky®

Military and public missions with safety-relevant data, which are normally executed under unfavorable environmental conditions such as humidity, frost, extreme heat and vibration, benefit from bug-proof basic protection.

It is also worth mentioning that the completely encapsulated, removable and replaceable hard disk is an additional integrated roda security feature. The Lizard® RW11 excels with up to four (RAID) hard drive bays, which allow the separation of critical mission data from the rest of the system data.

From roda basics to the needs of our customer

One of roda's unique features in the market is "customization": roda's definition of customization stands for the individual adaptation of standard products (laptops, tablets and displays) to meet the special requirements of our customers. These requirements are varied and are relevant to different fields of IT, for example:

- expansion of communication capability via integrated GSM, 3G, LTE or dual LAN modules with inclusive antennas,
- deployment of additional interfaces (e. g. MilBus Interface, additional standard interfaces),
- supplement of embedded crypto modules,
- implementation of cards for measurement and control,
- increase of the storage capacity and much more.

In order to meet such individual IT requirements, roda utilises an open product architecture, consisting of a modular kit of standardised components, as basis. These base modules will be configured during the sales procedure. Final products do not differ in their basic structure, but in their specific configuration. Therefore, the advantages of serial production, such as profitability, consistency and stability of the production process, are still achieved.
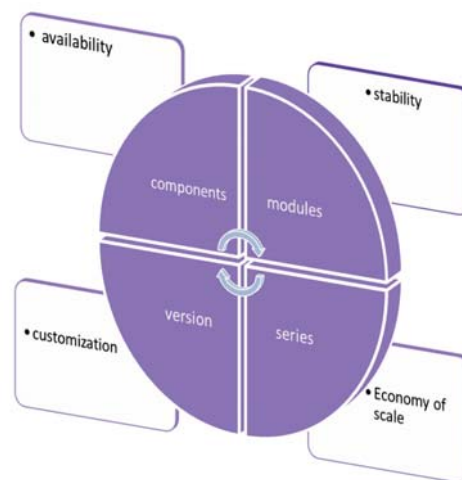
Our experienced roda technicians and sales team ably demonstrate the variety of our product lines through direct interaction with our customers. They also give feedback, concerning the realisation of individual requirements.

Therefore, the customer has the possibility to modify roda products quickly and efficiently in accordance with individual preferences or respective requirements. In addition, the customer benefits from enormous cost and service advantages which no other competitor can offer.

Here is just a small selection of our well-proven customization solutions:

- MobiLite – a Panther tablet without a display, used as a mobile computer unit in the same form factor,
- MobiTough – a Rocky® laptop without a display or keyboard as a mobile computer unit in the same form factor,
- FlexBay – Remote Video Function via the DVD slot of the Rocky® laptop,
- SINA Workstation H R RK9 Z1 – Rocky® Security Laptop Zone 1 and much more.

Examples for customization

The MobiLite was designed for applications requiring a mobile computer unit without a display. The MobiLite is based on the hardware of the Panther tablet. In addition, it is completely compatible with the Panther Docklite and the Kommleiste.

The MobiTough is the big brother of the MobiLite and was also designed as a mobile computer unit, but based on the Rocky® laptop. Due to its size, the MobiTough is much more flexible for customer specified adaptions, for example additional interfaces for military circular connectors or further expansion cards, such as radio modules or communication interfaces.

The Rocky® RK9 has also been modified in accordance with NATO SDIP 27 Level A at the request of a customer. It has no standard interfaces but one FOC LAN interface and three USB ports as DSub9 jack.

The SINA workstation H R RK 9 Z1 is a workstation that is based on the Rocky® RK9. It contains amongst other features a Smart Card Reader and a FOC (fibre-optic cable) network module with high security encryption. The device is certified in accordance with NATO SDIP 27 Level B and is delivered with 60 db filtered power supply (AC/DC & DC/DC).

The Rocky® KommServer is a special customization of the Rocky® PCMCIA case to integrate a communication processor and extends the Rocky® with special communication ports (for example: SEM 80/90, SEM 93 and V.24).

From Scratch to Solid IT

roda's product portfolio offers a multitude of laptops, tablets, displays, vehicle computers, special IT and power supplies in various types and versions. However, our customers occasionally require solutions which aren't satisfied by any existing IT solutions.

This eventuality demands creativity and rapid decision, to commence the development of a special purpose solution.

In addition to the scope of standard IT and the large number of modified Off-the-Shelf solutions (MOTS) roda is established as a reliable development partner of special purpose solutions due to its level of expertise.

From concept to design and electronic/mechanical manufacture carried out by the company's own internal resources, roda takes full responsibility for the timely and technically perfect realisation of a product.

The members of our internal development team are supported by the inclusion of additional German technical companies, depending on the special requirements of our customers.

Furthermore, the involvement of our customers within the framework of selected development reviews in selected phases of development, is of great importance.

The aim of these reviews is to achieve the controlled verification of required performance parameters and the common determination of subsequent actions for the successful continuation of a project, in terms of timescale and budget.

Due to roda´s flexible structure, customers have the option to introduce their own processes and requirements.

Finally, an example of IT special solutions which roda have already developed for and with our customers are listed below:

- Intelligent displays, in compliance with future NATO Generic Vehicle Architecture (NGVA),
- interactive virtual rock drill,
- server to specified dimensions, input and output interfaces as well as meeting environmental properties,
- large screens for situation reports in operation centres,
- portable multi High Definition Electronic Large Screen (HEL),
- system integrated display, special designed for future soldier programs,
- voltage converter for high complexity fuel cell technology (SOFC) and
- much more.
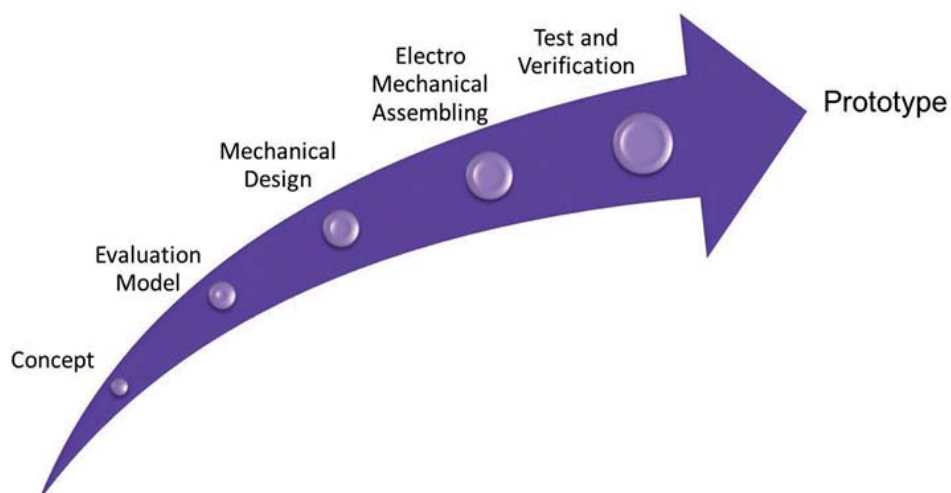
Customer orientated services

roda´s IT solutions usually consist of integral components of different military or security critical systems, which are used in rough mission areas.

These systems often have a regular life cycle from 5 to 20 years. In addition, there are specific requirements concerning system reliability, as they are used in sensitive networks from sensors to effectors.

It becomes obvious that every system needs its own technical and logistic support concept, based on the particular utilisation profile.

This scope of performance is far outside the general obligations, such as warranty and therefore exceeds the typical services of a general IT hardware supplier.

A reliable product road map serves the customer as a good planning foundation for long term IT projects.

In addition, roda warrants a minimum 5 years spare parts availability after product end of life (EoL) notice.

Furthermore, roda provides its customers project specific support concepts that are generated from a sophisticated definition of required elements of the integrated logistic support (ILS).
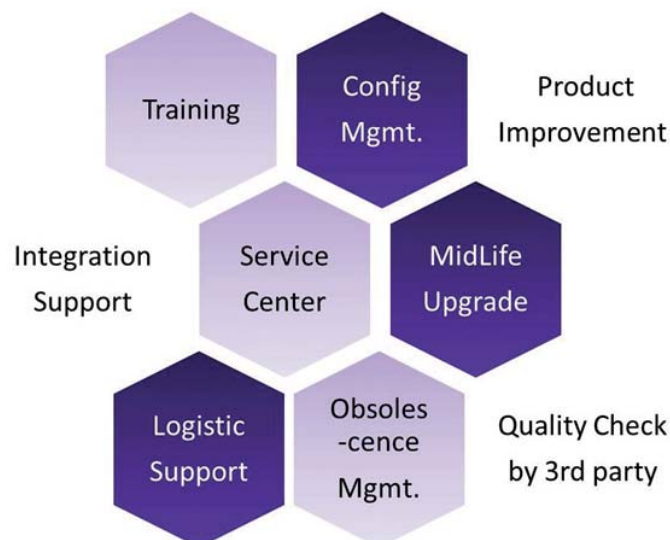
The scope of support offered is not fixed and can be flexibly adapted to new requirements or a changed usage profile.

Due to the partnerships we have in place with our main suppliers, these requirements can also be flowed down through the supply chain, by roda, with respect to critical components.

As a long-term contract partner of the German Army, roda takes the responsibility for repair and maintenance of rugged IT as a service partner, which is evident during military operations.

In the case of system life extension, or an imperative mid-life upgrade, roda consults with its customers to find a suitable and efficient solution in form, fit and functionality.

We consider the service of our products and feedback from our customers as a good opportunity to improve our IT products and services.

Training

Config Mgmt.

Product Improvement

Integration Support

Service Center

MidLife Upgrade

Logistic Support

Obsoles-cence Mgmt.

Quality Check by 3rd party

Examples of special solutions

Due to the development of the Rocky® DockUnder, it is possible to charge the battery of the Rocky® via the DockUnder and to perform different functions and interface expansions for peripherals (e.g. Display RD15) simultaneously and safely. Thus, the Rocky® with DockUnder may be installed in vehicles without problems and can also be used for mobile applications.

The 10.4'' GVA Display (RD10 – GVA) with extended temperature range (-46 °C up to 70 °C) and 28 control keys was designed in accordance with the GVA standard for armoured vehicle applications. Due to the extended temperature range, operations under rough ambient conditions are possible. The high brightness of the display and the background illumination of the keypad allow easy handling in both bright and dark environments.
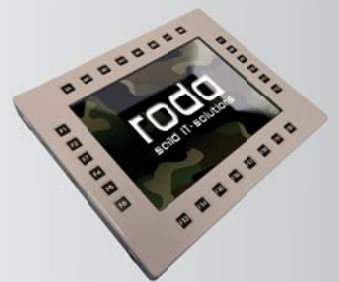
The HEL (High Resolution Electronic Largescreen Display) was developed by roda in order to meet the requirement of a high resolution visualisation of relevant data in command posts and operation centres.
The further development of the roda HEL version 2, is characterized by the mobility, the extremely powerful split-graphics-computer and the high resistance against environmental impacts, such as dust, humidity, shock and vibration.

roda also provides special customer designed hardware and special „solid IT-solutions" developed according to our customers' requirements. For example a control unit for drones or other unmanned vehicles.
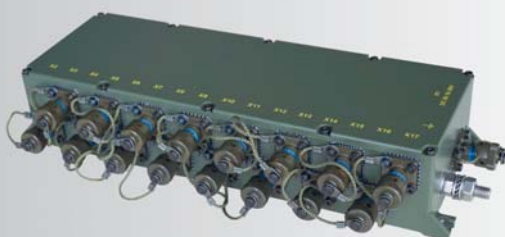
The roda MIL Ethernet Switch is a 6, 8, 14 or 16-port ethernet switch with military grade connectors, especially designed for use in military and armored vehicles. The switch is designed to meet MIL-STD810, EMC and IP65 criterias.