rdc-tec GmbH

IT Research, Development, Consulting – Technology Center



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| About rdc-tec |

rdc-tec means “Research, Development, Consulting – Technology Center”. We provide a broad specter of IT consulting services, as well as research and develop our own products.

IT projects are an integral part of any technology company. With best professional solutions, we bring your IT projects to success. We will accompany you all the way along: research, design, development, deployment and maintenance.

Just send us your project description for the first contact:

[consulting@rdc-tec.gmbh](mailto:consulting@rdc-tec.gmbh)

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| Clients and Partners |

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| https://brandportal.haysplc.com/bc_hays/img/hays-logo-limited.png | Hays PLC is an international company providing recruitment and human resources services across 33 countries globally. |
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| https://upload.wikimedia.org/wikipedia/commons/thumb/9/92/SEW_LOGO.svg/1000px-SEW_LOGO.svg.png | SEW-Eurodrive is a German manufacturing company founded in 1931. Today, it is an international organization that manufactures geared motors, frequency inverters and servo drives employing over 17,000 people worldwide with annual sales in excess of €2.8 billion. |
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| Bildergebnis für png karlsruher institut für technologie | The Karlsruhe Institute of Technology is a public research university and one of the largest research and education institutions in Germany. |
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|  | HS High Stake GmbH is a limited liability company with seat in Karlsruhe, Germany. |
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| Reference Projects | |
| 1500 man-hours | **SNMP Manager**  SNMP manager for embedded systems. |
| Service Delivery | Custom SNMP manager running on SEW UHX with Microsoft WEC2013 and communicating with Industrial Network Access Points Siemens W700. |
| Tools & Technologies | C, C++, SNMP, SNMP++, Net-SNMP, Windows API, embedded, cross compiler, Industry 4.0, Waterfall, Visual Studio, Application Builder, TFS, Doxygen, WireShark, WiFi, Ethernet, Industrial Network Access Point, router, embedded x86, WEC2013, MS Office, Windows |
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| 3000 man-hours | **Industrial WiFi/Ethernet Access Point Firmware**  A firmware variety based on embedded Linux frameworks for heavy duty network access points with multiple WiFi/Ethernet chips on board. |
| Service Delivery | Custom firmware / operating system development for Industrial Network Access Points ADS-TEC IWL3000, NXP/Freescale TWR-LS1021A, and SEW UHX on Linux LEDE/OpenWrt. Custom network protocols development: SEW Discovery Protocol (SDP), SEW JSON-RPC (SJR). |
| Tools & Technologies | C, C++, Python, PHP, HTML, CSS, XML, JavaScript, WSDL, MySQL, RegExp, GCC, embedded, firmware-/driver-/kernel-development, cross compiler, open source patches, SQLite2/3, JSON, JSON-RPC, SOAP, Web Services, Industry 4.0, Waterfall, Kconfig, StarUML, Eclipse, Brackets, Atom, NetBeans, CodeLite, PyCharm, PHPStorm, uHTTPd, iPerf, WireShark, Valgrind, WiFi, Ethernet, Industrial Network Access Point, router, ARM Cortex-7, x86, Raspberry Pi, Git, LibreOffice, MS Office, Linux Ubuntu, OpenWrt, LEDE, Raspbian, Windows |
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| 850 man-hours | **RTP Proxy for IP-Telephony**  A real-time proxy for audio streaming with advanced traffic analysis (e.g. jitter) and management (e.g. telephone answering and forwarding machine). |
| Service Delivery | Architecture design and development of a proxy server: multithreading core, Netty-like processing, asynchronous event loops, Reactive Streams, unit tests, etc. |
| Tools & Technologies | Rust, Cargo, MIO, Reactive Streams, Netty, IDEA IntelliJ, UDP, RTP, JSON, XML, Mercurial, WireShark, Windows, Mac OS X |
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| 2000 man-hours | **Computer Telephony Integration (CTI)**  A management system for integrated and coordinated interactions between telephones and computers. |
| Service Delivery | Architecture design and development of:   * Windows TSP driver: multithreading and multiprocessing framework, TCP/IP communication, TSPI2 compliance, RSA and SHA cryptography over SSL channels, etc. * Windows tray/dialog app: controls subclassing, TAPI2 compliance, Access Control List (ACL) processing, registry processing, multi-language support, check for updates, etc. * Windows MSI installer: unattended installation, multi-language support, etc. |
| Tools & Technologies | C++, Windows API, ACL, TAPI, TSPI, Crypto++, TinyXml, Visual Studio, Installer Essentials, ReSharper, Doxygen, TCP/IP, HTTP, UDP, RTP, RSA, SHA, MSI Packaging, Advanced GUI, Mercurial, WireShark, VMware, Windows |
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| 2000 man-hours | **Call Manager**  A novel N-tier system for computer-telephone interactions that allows more efficient integrated computer-telephone work- and dataflow within middle-size to enterprise business environments. All interactions between arbitrary numbers of computers and telephones are managed by dedicated telephony servers. The tiers include Ethernet telephones, desktop/mobile apps, streaming proxies, call manager servers, databases. |
| Service Delivery | Implementation of various features for streaming proxy and call manager servers within a team of developers: jitter analysis module, faxing functionality, etc. |
| Tools & Technologies | Java, Spring, Hibernate, Netty, Stream API, J2EE, log4j, JUnit, Maven, IDEA IntelliJ, C, XCode, CLion, gcc, PostgreSQL, HTML, XML, JSON, JavaScript, Node.js, AngularJS, Web services, RPC, SOAP, TDD, Model-Driven Engineering, TCP/IP, UDP, RTP, Mercurial, WireShark, Mac OS X, Linux, Full-Stack, B2B, B2C, CRM, CMS, SaaS |
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| 500 man-hours | **ProjectsImporter**  A parser for freelance sites with an aggregator and a web presentation of projects. |
| Service Delivery | Architecture design and development of parsing service and 3-tier aggregator-presenter system: multithreading processing, model-driven engineering, Hibernate OGM, Guice dependency injections, database caching, etc. |
| Tools & Technologies | Java, Hibernate, Google Guice, JUnit, Apache CLI, log4j 2, JSP, J2EE, AngularJS, Maven, IDEA IntelliJ, JavaDoc, JIRA, Confluence, HTML, MongoDB, NoSQL, UML, StarUML, Tomcat, Git, Latex, Windows, B2B, Responsive Design, Full-Stack |
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| 3000 man-hours | **Semantic Tracking Modules** Novel tracking algorithms for the Fraunhofer Network Enabled Surveillance and Tracking (NEST) system. The NEST system allows intelligent monitoring and surveillance of public areas (storehouses, train stations, airports and maritime areas). |
| Service Delivery | Research and development of semantic tracking modules. The developed tracking modules (JIPDAF, bootstrap particle filter) are empowered by an extended data association (additional attributes, e.g. color and sizes), the Least Discernible Quantum concept and a high-level memory framework. |
| Tools & Technologies | Java, Apache Commons Math, Maven, NetBeans, XML, XSL, Bayesian theory, mathematica, Git, JIRA, Confluence, Windows, Linux |
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| 10000 man-hours | **High-Level Memory for Intelligent Humanoid Robots** A humanoid robot is one of the most complex and advanced intelligent autonomous systems. Here the ultimate goal is the creation of an anthropomorphic robot that is similar in appearance and cognitive abilities to a human. Since the intended capabilities imply most advanced cognition, reasoning and planning, a corresponding high-level memory system has to be similar to human memory. |
| Service Delivery | Research and development of high-level memory structure for humanoid robots (ARMAR-3, 4):   * leading of the “Perception and World Modeling” working group; * real-time multithreading cross-platform distributed environment; * data representation as multivariate Gaussian Mixtures; * entities representation as dynamic sets of arbitrary attributes and relations on the basis of a proposed Progressive Mapping mechanism; * prior knowledge representation as ontology of known entities, classes and rules; * Bayesian update (Kalman filter, JIPDAF, bootstrap particle filter); * probabilistic classification on the basis of weighted structural and pdf similarities; * information deficit analysis on the basis of information entropy; * Gaussian Mixture components reduction and weighted sampling on the basis of weak distance analysis with probe functions; * Least Discernible Quantum employment for particle filter re-sampling and entropy calculation unification. |
| Tools & Technologies | C++, CMake, OGRE, OpenGL, DirectX, Boost, Java,  XML, TCP/IP, UDP, ontologies, ontoprise, Protégé, NoSQL, MongoDB, mathematica, MATLAB, Blender, Subversion, Mercurial, Windows, Linux |
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| 3000 man-hours | **Kµ4 Decay Analysis** A NA48 experiment at CERN has gathered about 4 Tb data for kaon decays. This has brought new possibilities for semileptonic decays analysis: branching ratios, chiral perturbation theory checks, etc. |
| Service Delivery | Research and development of an analysis system for the rare kaon decay Kµ4. Hereby, each decay event is contaminated by millions of clutter decays. The system managed to get several thousands of Kµ4 events (646 times better than any previous attempt in the world) and analyze their branching ratio. |
| Tools & Technologies | C++, CERN ROOT, mathematica, Latex, Windows, Linux |
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| 2000 man-hours | **University-Wide IT Infrastructure** An IT infrastructure for the University of Mainz (35 000 students, 6 000 employees). |
| Service Delivery | Architecture design and development of:  AD Service – analysis and monitoring of the university-wide Active Directory for portal applications;  WEA Service – Windows Event Log analysis for distributed filtering and monitoring on all computers of the Uni-Mainz.DE domain. Information transmission to a central database based on BITS and SSIS. OLAP and data mining analysis based on the MS SQL-Server Analysis Services. Visualization with Reporting Services, presentation of multidimensional data-cubes of events, data mining;  Notification System – trigger system for failure events monitoring of heterogeneous data sources on the basis of MS SQL Notification Services. Notification of University of Mainz administrators per e-mail, RSS, Windows Messenger within a “publish/subscribe” architecture;  Unified Messaging for the MS Exchange Server – control of the Message Waiting Indicators (MWI) of the University of Mainz telephone system for voice mails stored in MS Exchange mailboxes;  Web Mining OLAP – analysis of Apache server logs with the MS SQL Analysis Services;  ZDV Browser – secure web browser for public campus computers and classes for electronic examinations. The browser also substitutes Windows shell (Explorer and command line) and is flexibly configurable for different environments. |
| Tools & Technologies | C++, COM, ATL, Windows API, MFC, C#, ASP.NET, MS SQL, SQL Server Integration Services (SSIS), BITS, OLAP, Data Mining, XML, XSL, MS Exchange, MS IIS, Apache HTTP Server, Subversion, Windows, Linux |
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| 1000 man-hours | **ATLAS Detector**  ATLAS is one of detector experiments constructed at the CERN Large Hadron Collider (LHC). The detector is 46 m long, 25 m in diameter and weighs about 7 000 t. It produces 1 petabyte (PB) of data per second. |
| Service Delivery | Development of:   * trigger system for the Liquid Argon Calorimeter of the ATLAS detector. The system calculates incoming energies (incl. jet energy summation) on the firmware level dealing with 40 million complex events per second; * purity control and monitoring system for the calorimeter.   Extensive tests of the muon spectrometer. |
| Tools & Technologies | C, C++, LabView, SPSS, FPGA, CAN bus, Windows, Linux |
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| 1000 man-hours | **Acoustic Signals and Speech Recognition System** A system for acoustic signals and speech analysis with classification. |
| Service Delivery | Architecture design and development of an acoustic signals and speech analysis system with Fourier/wavelet transformations, temporal analysis based on Markov chains, etc. |
| Tools & Technologies | C++, MFC, DirectX, mathematica, CVS, Windows |
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| 600 man-hours | **Template Translation System Multilingual Support** The system allows automatic site text extraction, distributed translation, automatic substitution. |
| Service Delivery | Architecture design and development of N-tier template translation system: admin/user apps, front-end and back-end for multilingual support of web sites. |
| Tools & Technologies | Java, RMI, JSP, Servlet, J2EE, B2B, E-Commerce, C++, ASP, HTML, CSS, JavaScript, XML, XSL, PostgreSQL, Oracle RDBMS, UML, Rational Rose, MS SourceSafe, Windows, Linux |

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| Technical Experience | |
| **IT Languages** | Java  C  C++  C#  Python  SQL  HTML  XML/XSL  CSS  JavaScript  UML  OWL  RDF  WSDL  Visual Basic  Rust  Lisp  Pascal  Fortran  Perl  Bash |
| **Technologies** | .NET  ASP.NET  ASP  JSP  Hibernate  COM  ATL  MFC  Windows API  JSON  JSON-RPC  SOAP  RMI  RPC  JUnit  SSL  RSA  XPath  HTTP  jQuery  AngularJS  Node.js  Semantic Web  CGI  ISAPI  POSIX  Boost  OGRE  Open GL  DirectX  OLE  ActiveX  Ontology  J2EE  JavaFX  Swing  Continuous Integration  Mocking Framework  Maven  CMake  OOP  Crypto++  SASS  Jade  DoxyGen  JavaDoc  OLAP  Active Directory  TAPI  TSPI  ACL  BITS  JFC  TCP/IP  UDP  RTP  NoSQL  RTSP  FPGA  CAN bus  Netty  Reactive Streams  JDBC  MIO  Cargo  Applet  Google Guice  CERN ROOT  Java Native  Servlet  B2B  B2C  SaaS  Web Services  CRM  CMS  WordPress  J2EE |
| **Databases** | MySQL  MS SQL  Oracle  MS Access  PostgreSQL  Ontoprise  Protégé  SQLite  MongoDB |
| **Web & Application Servers** | MS IIS  Apache HTTP  Apache Tomcat  JBoss  WebSphere  GlassFish |
| **Tools & Software** | Visual Studio  ReSharper C++  CLion  XCode  PyCharm  GCC  Cross compiler  IntelliJ IDEA  Eclipse  NetBeans  Atom  PHPStorm  MS Office  JIRA  Confluence  mathematica  MATLAB  LabView  SPSS  Adobe Photoshop  Adobe Premiere  Adobe After Effects  Adobe Illustrator  CorelDRAW  GIMP  Lotus Notes  Brackets  WireShark  StarUML  Together  Rational Software Architect  Latex  Google Docs  VMware  Oracle VM VirtualBox |
| **Versioning** | Git  Mercurial  Subversion, SVN  CVS  MS Source Safe |
| **Operating Systems** | Windows  Windows CE  Linux  Embedded Linux  FreeBSD  Mac OS X  iOS  Palm OS  VAX/VMS |
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| Additional Information | |
| **Software Engineering** | Object-Oriented Analysis and Design, OOAD  Database Design  Design Patterns  Algorithms and Data Structures  Multithreading  Model-Driven Engineering  Advanced Windows Programming  Advanced Linux Programming  Scrum  Kanban  Pair Programming  Extreme Programming  Test-Driven Development, TDD  Waterfall |
| **Industrial Know-How** | Robotics  Telephony  Information Fusion and Tracking  Classificators  OO Environment Modeling  High-Performance Servers  Development of Secure Systems  Embedded Systems  Data Mining  E-Commerce  Web 2.0  Industry 4.0 |
| **Languages** | English  German  Russian |
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