# Profile Dr. Jan Golka

M. Sc. (Physics) and Ph.D. (theoretical Physics).

IT-Experience since 1972. Professionally active since 1973. Until 1984: Research at renowned institutions, like the University of Oxford and the Max-Planck-Institute for Solid State Physics. Active as software engineer, software architect, project manager and IT consultant since 1984.

Since 03.1998 owner, chief-designer and principal consultant, Data Design & Management GmbH, Stuttgart and Remagen near Bonn.

## Professional Strengths

Wide-ranging spectrum of experience: very extensive general knowledge, knowledge of the natural sciences, fundamentals of microelectronics, communications and information technology.
Extremely high productivity as programmer (programming as passion!). Broad experience spectrum, many years of practice. High initiative, self-motivation and stress resistance. Excellent communication and customer-facing skills.

## Key specialization

- Design and development of Oracle-based information systems.

- Data modeling and database design.

- Database programming in PL/SQL and Java.

- Oracle Spatial, Oracle XML DB.

- Development of Web applications with Oracle APEX, JavaScript, Google- and Nokia-Maps API.

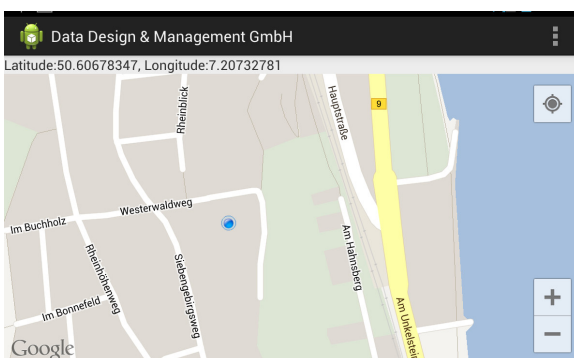- Mobile development for Android.

## Expertise

Expertise in the field of Oracle database technology, development tools, and PL/SQL programming, with project experience since Oracle database version 7.0 (1994). Many years of experience as software developer, project manager and consultant. Successful implementation of major projects.

## Offer

As a highly experienced software professional with an extremely efficient way of working I prefere full responsibility (time, budget) projects.

I support you throughout the development process, from concept to realization for the introduction and maintenance of the complete system. Due to my my strong technical background, long and highly diversified software practice and almost twenty years experience as a database developer I quickly find and implement the proper solution. My highly skilled services are available for attractive fixed prices, competitive to outsourcing.

I also offer highly qualified freelance consulting ("time & material") on favourable hourly or daily rates.

## Contact

Data Design & Management GmbH

Westerwaldweg 16

D-53424 Remagen

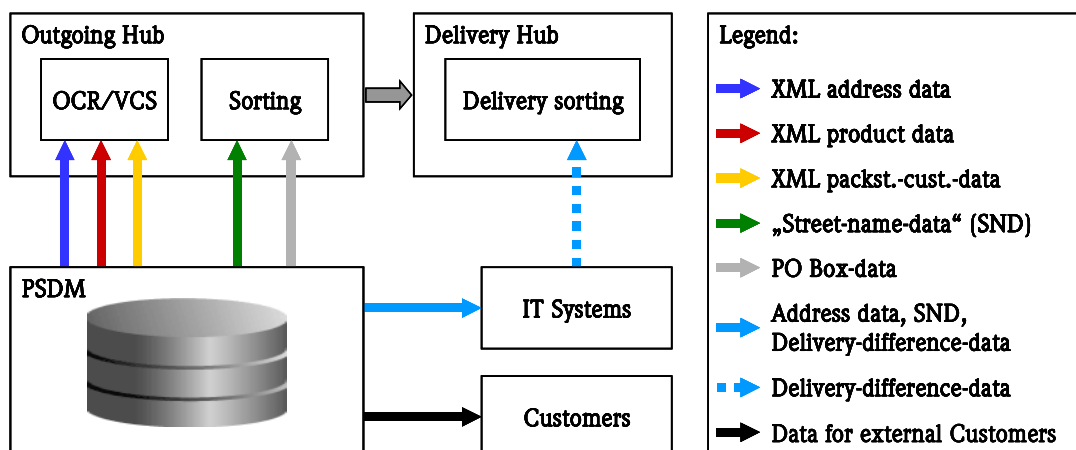Tel. +49-22 28-911 622, mobile +49-172-710 323 0

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http://www.d-d-m.de

# Overview

| | |
|---|---|
| **Competencies** | **Design and development of Oracle-based information systems:** |

- In-depth project experience with Oracle server (all versions starting from 7.0) and design tools ("Oracle CASE Dictionary", today "Designer") since 1994.

- Data model / SQL / PL/SQL Tuning.

**Data modeling** (relational (ER), object-relational (UML), hierarchical (XML)).

**Database design**, data replication, database- and administration, ETL.

**Database programming:**

- PL/SQL (experience since 1994; PL/SQL is since years my main programming language).

- Java.

**Development of Web applications with Oracle Application Express (APEX).**

**Development of native applications for Android platform.**

**IT-Consultancy:**

- Business process analysis and modeling.

- Studies, Requirements, Specifications.

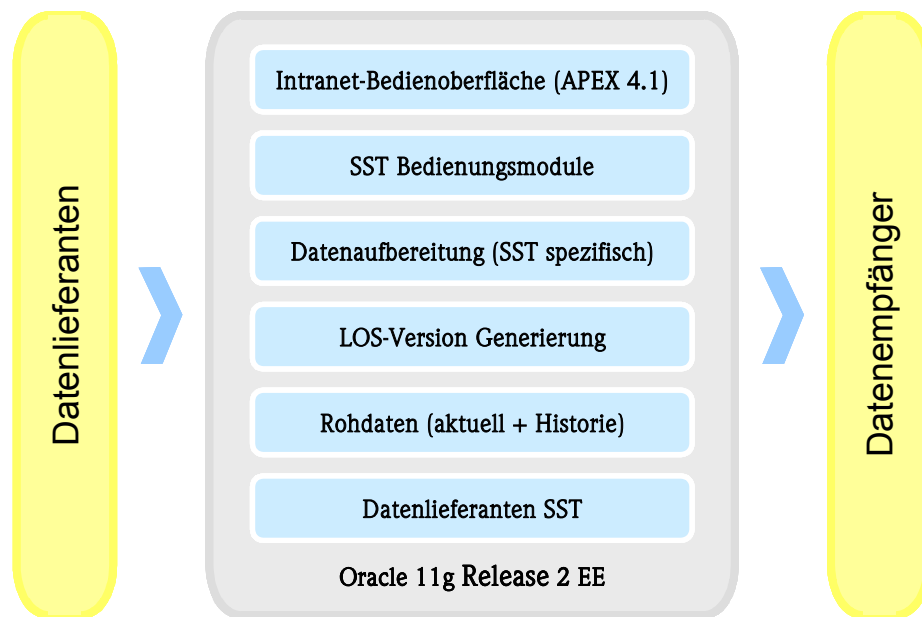| | |
|---|---|
| **Industries** | Mechanical and plant engineering, machine-tool industries, automotive and -supplier industries, building trade, public administration, postal and parcel services, insurance, software and system houses, Telco. |
| **Special knowledge** | Postal services, parcel logistics (production systems and data): System development and consulting since 1994. |
| **Operating systems** | Unix, Linux, Solaris, Windows. |
| **Programming languages** | C, C++, HTML, Java, JavaScript, JSON, jQuery, PL/SQL, Python, Shell, SQL, XML. |
| **Database systems** | All major Oracle versions from 7.0 until 12.1 (SQL, PL/SQL, Java, JDBC, SQLJ, Pro*C/ESQL, Forms), NCR Teradata, self developed database systems. |
| **Oracle Tools** | Designer, Developer, JDeveloper, APEX, ORDS, Oracle Warehouse Builder, Oracle Map Viewer, Oracle Maps, Oracle REST Data Services (ORDS). |
| **Geodata** | Oracle Spatial, Google Maps API, JavaScript, Nokia Maps JavaScript API. |
| **Internet/Java Techn.** | HTML, CSS, Web Services (REST), Webserver. |
| **XML, XML DB** | Oracle 10g / 12c: XML DB, XML Type, XML Schema, XSQL, XMLSPY. |
| **Mobile systems** | Android, Android Studio, Eclipse, Java SE, Android SDK. |
| **DOAG Conference Lectures** | 2006: "Oracle XML DB in operation", <br> 2007: "Notebook in place of computing center". <br> 2013: "Google Maps and Nokia Maps in APEX". |
| **Languages** | Polish (mother tongue), English and German (fluent), French and Russian (knowledge). |
| **Memberships** | IEEE, IEEE Computer Society, DOAG. |

# Current Project:

**Name**          **Production master data management system (PSDM) for parcel production.**

**Customer**      International logistics company. Full responsibility, as contractor and since 08.2008 as a subcontractor (an international electro engineering company).

**Roles & Tasks** Full responsibility (design, technology and budget), concept, system, data model and data base design, realization of most PL/SQL and Java Packages. Software maintenance contract. The whole project was realized by Jan Golka and a single freelance partner on a fixed-price basis.

**Milestones**    **2016**: Extensions for DHL Parcelnet in Austria.

                  **2012:** Extensions for new production systems. Software support and hotline.

                  Since **2011**, PSDM supplies the surrounding application systems as well as the external customers with data.

                  Since **2010**, the hub-to-hub parcel production process is fully controlled by the PSDM data.

                  Since **2007**: Interfaces to various production systems.

                  **2005, 2006**: System kernel and first system components online.

                  **2004**: Specification.

**Motivation**    The introduction of a new production system („Parcel Reader System PALS") required the regular supply of very complex XML data for the so-called „dictionaries" (address-, products- and packstation-customers-dictionary) for OCR and video coding. Since none of the existing IT systems of the customer was able to solve this task, it was necessary to realize a completely new system „from scratch". The first step was to consolidate all production master data in a single, redundancy free database.

                  The complexity of the task was highlighted by the fact that two earlier realization attempts failed. The second attempt, although substantially smaller in scope, lasted over a year and was more expensive than our whole development.

**Customer Benefits** The success of our very fast implementation encouraged the customer to also switch over the remaining process interfaces to the new master data supplier. Which, in turn, resulted in a considerable simplification of the processing. For example, an old, manually controlled and maintenance-intensive workflow of Shell-, C- and awk- as well as Excel programs was replaced by an automatic database processing via PL/SQL programs. The until then very costly and error prone operation was substantially simplified, the running time shortened, the data quality increased and the overall support and maintenance costs were significantly lowered.

                  Providing the basis for a flexible process control, our system helps the customer to reach his long-term goal to respond quickly to the changing requirements of parcel production. All production master data are now in a single database, which considerably simplifies system extensions like the use of geographic data (Oracle "Spatial Data Option") for "chaotic" delivery.

**PSDM**

**System-architecture**



**Implementation & Technology Details**

The production master data are maintained in an Oracle 11g data base. The system daily receives data from the data suppliers, remote Oracle instances. The transformed and augmented data is then used to supply all production interfaces. The system's own data is maintained with the help of the intranet user interface. This interface is also used to activate Oracle database PL/SQL jobs feeding in the production system interfaces.

With data quality as well as performance of the processing processes as main goals, the data base is 100% normalized (3NF). Most of the historic data is archived.

The system supplies production data either as XML files or uses application specific formats. The complex XML mass data for the OCR and video-coding "dictionaries" are produced with the help of Oracle XML DB, a component of the Oracle database. All data generation processes are implemented as PL/SQL Oracle jobs within the Oracle job queues.

One of the interfaces delivering data to the external systems is deployed as a separate Oracle instance for security and redundancy reasons. It can be located at a geographically distant location as part of a "geocluster" (for geographic redundancy).

The entire program logic is implemented in PL/SQL (over 250,000 PL/SQL code lines). Operations like the compression of the files and/or file manipulations were implemented in Java and integrated in PL/SQL programs (ca. 5000 Java LoC).

The entire processing takes place within the data base, without Shell, SQL*Plus in Shell etc. programs. The flow control within the application is steered via Oracle scheduler.

Because of the partially bad (logical) quality of the supplied data, extensive data quality-assurance measures are applied (example: the consistency of the history data is safeguarded by a 30,000 code lines PL/SQL package).

The system has an intranet user interface, which was realized with Oracle Application Express. Oracle 11g R2 was used as database platform.

As a special feature, the system deals with an application close to production:

- The hardware does not reside in a computer centre, but on the shop floor.

- The system is remotely controlled and serviced.

- Since production start, the system has run practically maintenance free and with 100% availability.

**Deliverables**  The following components were realized:

- Database: ca. 915 Tables in 12 schemas in two Oracle instances (Kernel system, Interfaces-DB).

- Business logic: ca. 250.000 PL/SQL code lines, ca. 5.000 Java LoC.

- Data transfer interfaces (remote Oracle instances).

- Generation of the complex XML mass data (> 1 GB per supply) for the so-called "dictionaries" for the OCR and video-coding production components.

- Reengineering a Shell-, SQL*Loader-, C- and awk-application as a very efficient PL/SQL program system. Reduction of the total duration of weeks (host) on approx. two hours on a notebook!

- Reengineering of remaining interfaces, inclusive introduction of an additional Oracle instance as a „data supply data base", which also can be used as a geographically separated backup.

- Extensions for new production systems.

- Intranet GUI via Oracle APEX (ca. 350 UI screens).

**APEX GUI**  The PSDM intranet GUI consists of about 350 screens. A prototype development, started in 2005 with the APEX precursor "HTML DB", evolved into an interactive, ergonomic user interface. It is used both for data input as well as for the control of the background processing via DBMS_SCHEDULER, and also for the backup (with the use of DBMS_DATAPUMP).

**Tools**  Oracle 9.2, 10.2, 11.2 and 12.1, Oracle XML DB, Oracle Designer 10, TOAD, XML, DTD, XML Schema, SQL, PL/SQL, Java, XSQL, XMLSPY, Oracle Application Express (APEX) 1 - 4.2.

# IT Knowledge and experience:

| | | |
|---|---|---|
| **Operating systems** | MS-Windows since 3.0 | Expert Knowledge |
| | SUN Solaris (2.x bis 8.x) | Expert Knowledge |
| | Linux (RHEL, CentOs, Android) | Good Knowledge |
| **Programming languages** | SQL, Oracle PL/SQL | Expert Knowledge |
| | C (incl. Pro*C und Oracle Call Interface) | Expert Knowledge |
| | XML | Expert Knowledge |
| | Java (incl. Swing, JDBC, SQLJ) | Good Knowledge |
| | JavaScript, JSON, jQuery | Good Knowledge |
| | C++ (inkl. Windows API) | Good Knowledge |
| | Python 2 and 3 | Basic Knowledge |
| | Unix Shell-Variants | Good Knowledge |
| **Database systems** | Oracle (5.1B; all major versions from 7.0 until 12.1) | Expert Knowledge |
| | XML DB, XSQL | Expert Knowledge |
| | SQLite | Good Knowledge |
| | Teradata | Basic Knowledge |
| **Oracle Tools** | Designer (CASE Dictionary 5.1 bis 10.1) | Expert Knowledge |
| | Oracle Application Express (APEX, earlier HTML DB) | Expert Knowledge |
| | SQL*Plus | Expert Knowledge |
| | JDeveloper (1.0 bis 11g) | Good Knowledge |
| | Oracle Spatial (SDO) | Good Knowledge |
| | Developer (Forms, Reports) | Good Knowledge |
| | Oracle Maps, Oracle MapViewer | Basic Knowledge |
| | Oracle REST Data Services (ORDS) | Good Knowledge |
| | Oracle ADF, JSF, BC4J | Basic Knowledge |
| **Database tools** | TOAD | Expert Knowledge |
| | Sybase PowerDesigner | Basic Knowledge |
| **OLAP / ETL / BI Tools** | Informatica PowerMart, PowerCenter | Basic Knowledge |
| | Oracle Warehouse Builder | Basic Knowledge |
| **Mobile systems** | Android Studio, Eclipse, JDK, Android SDK, SQLite | Good Knowledge |
| **Internet** | HTML, CSS, JavaScript, JSON, jQuery, HTTP, REST | Good Knowledge |
| **XML** | XMLSPY, XML-Schema, DTD, XMLPath | Expert Knowledge |
| **Applicationserver** | Oracle OHS, Apache, XAMPP | Good Knowledge |
| **Maps Services** | Google-, Nokia Maps JavaScript APIs, Webservices | Good Knowledge |
| **Applicationsframework** | ICIS (Insurance Company Information System) | Basic Knowledge |
| **Legacy progr. languages** | Algol, Assembler, Basic, Fortran, Pascal | Expert Knowledge |
| **Legacy plattforms** | DEC (PDP-11/RSX-11, VAX/VMS), HP: HP-1000/RTE-A | Expert Knowledge |
| | SINIX, Ultrix, HP-UX | Expert Knowledge |

# Projects:

**Since 04.2017** **Re-engineering concept for the PSDM APEX GUI**
Requirements analysis for migration of the PSDM GUI from APEX 4.1.1 to 5.1.
*Oracle 11.2 u. 12.1, PL/SQL, APEX 4.1, 4.2 aund 5.1.1. Google Maps JavaScript API.*

**01.17 - 07.17** **Development of a new version of the Android App "Skrytka"**
Since 10.07.2017 in Google Play Store and since 12.07.2017 in Amazon Web Shop.
*Android 4.2 bis 7.1, CyanogenMod, Android Studio, AES, Java, XML.*

**05.15 - 12.16** **Extension of the master data management systems (PSDM) for Austria**
PSDM database- and systemextension for the DHL parcelnet in Austria.
Partial delivery 12.2015, since 28.09.2016 in the production.
At present, development of the user interface components in APEX.
*Oracle 11.2 u. 12.1, PL/SQL, SQL, Java, DTD, XML, TOAD, XMLSpy, APEX 4.2.*

**09.15 - 10.15** **Website "www.d-d-m.de": Redesign on basis of a  Responsive-Design-Template.**
*HTML5, CSS, Bootstrap.js, FontAwesome.*

**06.15 - 07.15** **REST Service for the Datacommunication Oracle <--> Android**
Server development on basis of ORDS, Android Client-App.
*Oracle REST Data Services (ORDS), Oracle 11.2, Java, JSON, Android Studio.*

**09.14 - 03.15** **"Skrytka (Hideout)": Android App for safe storage of personal data („Credentials")**
256-Bit-AES encription of data and credentials with extensive security features.
Since 24.03.2015 in Google Play Store (and in Amazon Web Shop):
*https://play.google.com/store/apps/details?id=de.d_d_m.skrytka&hl=en*
*Android SDK, Android Studio, Eclipse, Java, SQLite, Advanced Encryption Standard (AES).*

**03.14 - 07.14** **Journyx-Migration, international chemistry company**
Migration of an internet-based timetracking-systems ("Journyx Timesheet") from version 7.6 to 9.1 inkl. Oracledatabase migration (10.2 --> 11.2).
- Data migration (System database, Data Warehouse) .
- DWH Datamodel- und ETL-Extensions (SQL, PL/SQL).
- DWH load time reduction from hours to 30 to 50 min.
- Modification of a managementtools (Java, SOAP, Journyx Java-API).
*Oracle 10.2 u. 11.2, RHEL, Shell, PL/SQL, Java, Python, LDAP, TOAD, Eclipse.*

**06.14 - 07.14** **Production master data management system PSDM, international logistics company**
Re-Engineering of the parcel-station customer data interface.
*Oracle 11.2, PL/SQL, TOAD.*

**05.13 - 09.13** **REST Webservice as a platform-independent supplier of the production master data**
PSDM REST Webservice for Oracle XML data (concept).

**Since 11.2012** **Android native Apps development**
Development of Android Apps with Java, Android Studio, Eclipse, Android-SDK, SQLite, Google Maps,  Bluetooth SPP, NFC, AES data encryption.

**09.12-06.13** **Studies: Migration of Oracle Forms 6i to APEX; Google Maps and Nokia Maps in APEX**
- Investigation of the portability of Forms 6i to APEX, particularly specific to the keyboard operation.
- Use of the Nokia Maps and Google Maps API in APEX; Migration from API v2 to v3.

**01.04 - 07.12** **Production master data management system PSDM, international logistics company**
**See the detailed description above.**

**05.11- 07.11** **Migration of the communal supply network data (gas, electricity, water, heat)**
Collaboration on a complex migration of the communal network data (geographic data in the SQD-format) from SICAD to GINIUS (Intergraph).
*Oracle 10.2 and 11.2, SQL, PL/SQL, TOAD.*

**04.11– 05.11**    **APEX Intranet reporting system prototype for a communal gas network**

Oracle APEX prototype for reporting on gas network components (two-dimensional SDO_GEOMETRY data).

*Oracle 11.2 with the Spatial Data Option (SDO), Oracle APEX 4.*

**01.08 – 02.08**    **Technical support (Oracle and other RDBMS) of a complex migration process, international mobile communication provider**

Technical support for database migration (rating, billing,  provisioning etc.).

**07.03 – 09.03**    **Provisioning system for mobile- and terrestrial  communication, international comm. provider**

Optimizing of the billing system interface; Data model- and job control optimization. Data import from external systems. Migration (8.1.6 --> 9.2) consulting. Optimizing of PL/SQL Packages (**30 PL/SQL Packages à 3,000 to 5,000 LoC**).

Consulting: Database design and programming, System architecture and Tools.

*Oracle 9.2 and 8.1.6, PL/SQL, Solaris, Shell, Informatica PowerCenter 6.1, TOAD.*

**05.98 – 12.04**    **„Parcel – Reader System PALS" (OCR and video coding of parcels), international logistics company**

Consulting:

- Pilot project, RFI, customer requirements specs, final certification and deployment.
- System architecture concepts.
- Supervision and support of internal and external interfaces (DP AG, contractors).
- Subproject: concept and implementation of a database system for the quality control and result analysis.
- Subproject: concept and implementation of an interface to the Data Warehouse of the Deutsche Post AG.

**07.00 – 03.03**    **„Quality system PQMS", international logistics company**

Design and implementing of a Java C/S application for the PALS yield quality control:

- Concept, system analysis, data model and database design.
- Business logic development (PL/SQL).
- GUI development (Java / Swing, JDBC and SQLJ, Reporting via Excel).

*Oracle 8.1.7 and 9.2, Designer 6i/9i, PL/SQL, JDeveloper 3.2, Java, Swing, JDBC,   W2K.*

**02.02 – 11.02**    **IT – planning and controlling, international logistics company**

Consulting about software architecture, system integration, project realization and controlling. Preparation for the migration of production systems:

- Reverse Engineering of all production databases of the Euro Express branch.
- Examination of data replication mechanisms as well as all others potentially critical migration paths (Oracle 7 to 8i / 9i migration).
- Elaboration of proposals for database migration rectifications (elimination of serious design errors). Guidelines preparations for the database port.
- Examination of all "critical spots" of Shell, SQL, PL/SQL, Pro*C and C / OCI application programs.

*Oracle 7.3.4, 8.1.7 and 9.2, Designer 6i, TOAD, Sybase PowerDesigner, NCR Unix, SUN Solaris 8.*

**11.00 – 10.02**    **„PALS data mart", international logistics company**

Design and development of a data mart for PALS parcel events in the Data Warehouse:

- Data model, DB design.
- Loadscripts for Informatica ETL Tool PowerMart.
- Extension and migration (NT → Solaris) of a data mart for PALS parcel events in the Data Warehouse.

*Informatica PowerCenter 1.6 / PowerMart 4.6, 5.1, Solaris 8, NCR Teradata 2, Oracle 8.1.6, Designer 6i.*

**12.99 – 06.00**  **„Auslandsdaten", international logistics company**

Design and implementation of a database information system for country data:

- System analysis, data model and database design.
- Business logic development (PL/SQL).
- Specification and partial implementation of Intranet-GUI (Oracle WebDB).

*Oracle 8.1.5, Designer 6.0, PL/SQL, WebDB, SUN Solaris 7.*

**09.99 – 06.00**  **„Address reader master data", international logistics company**

Design and implementation of a database information system: Technical project management. System analysis, data model and database design.

*Oracle 8.1.5, Designer 6, PL/SQL, C, Informatica PowerCenter / PowerMart, SUN Solaris 7.*

**04.98 – 08.99**  **„Post Box owner address data", international logistics company**

Design and implementation of a database information system: System analysis, data model and database design. Design and implementation in PL/SQL, Pro*C and Shell. Data migration from the predecessor system.

*Oracle 7.3.4 und 8.0.5, Designer/2000, PL/SQL, Pro*C,  NCR Unix.*

**09.97 – 03.98**  **Optimization of the entry and supply areas of the German Parcel Post**

*Design and development of the application system.*

*Oracle 7.1.6 und 7.3.2, Pro*C, PL/SQL, NCR x86 Unix SVR4.*

**04.97 – 08.97**  **"Accommodation Information System UFIS+", German Ministry of Defense**

System analysis, data model, data distribution concept, system design using an object-oriented Framework (*Re-engineering as Client/Server System*).

*Designer/2000, IBM DB 2.*

**01.97 – 03.97**  **Direct marketing insurance system for DMS KK (Royal & Sun Alliance, Japan)**

System development  based upon Insurance Company Information System (ICIS) from the Debis Systemhaus GmbH.

*Oracle 7.3, Designer/2000, Developer/2000, Forms 4.5, PL/SQL, HP-9000 (HP-UX).*

**08.95 – 01.97**  **IT based post redirection system INA for the Deutsche Post AG (AEG Electrocom GmbH)**

- Leading to the sub-project "ORACLE Database".
- System analysis and specification. Design of the technical data concept of the system.
- data model and database design; data replication.
- design and development of the procedural logic (PL/SQL Packages).
- design and development of system components.
- Installation and administration of Oracle databases.

*SNI RM-400, RM-600 (SINIX V5.42), SUN SPARC (Solaris 2.4), DEC AlphaVAX (OpenVMS), PC (Windows-NT, x86 Solaris 2.5).*

*Oracle 7.2.2, SQL*Net V1 and V2, Designer/2000, PL/SQL, Pro*C, C, C++, GRITplus.*

**11.94 – 11.95**  **Coding Training and Simulation System CTS (AEG Electrocom GmbH)**

Computer based training system for mail video coding. Used by the Royal Mail and the Singapore Post. Data model, database design, administration and tuning. Design and implementation of database functional interface as a thread-safe Pro*C/ESQL library.

*Oracle 7.1.4, CASE Dictionary 5.1, Designer/2000, PL/SQL, Pro*C/ESQL, C, Solaris 2.4.*

**05.94 – 10.94**  **Oracle-Client-Modules for MS-Windows (Robert Bosch GmbH)**

VAX/VMS and Ultrix to MS-Windows 3.1 port (Windows Dynamic Link Libraries).

*Oracle 7.0, Pro*C/ESQL, Visual C++, Windows SDK 3.1, DEC VAX (VAX/VMS, Ultrix).*

**11.91 – 10.94**  **„winBau": Software package for building contractors, (bids, projects, calculation, materials, addresses, GAEB, DATANORM), transactions based**

System development.

*Visual C++, Windows SDK 3.1, MFC 2.0, Novell, ProtoView, Raima Database Manager, MS-Setup Toolkit for Windows, MS-Windows 3.0 und 3.1.*

## Projects 1972 – 1991:

| Year | Project | Responsibilities | Systems, Tools |
|---|---|---|---|
| 1991 | Cisco-Router telediagnose programm (TCP-Client) | System specification and development | VAX/VMS, WIN/TCP, C |
| 1991 | Host-PC connection "Factory Link" - FMS connection) (C/S system) | System specification and development | VAX/VMS: DECnet, PCSA, C; MS-DOS: PCSA, DECnet-DOS |
| 1991 | Interprocess communication via Ethernet (TCP/IP) | System development | VAX/VMS, Unix, UCX, WIN/TCP, C |
| 1990 | Host -Host connection: PPS-FFS-link | System specification and development | VAX/VMS, Unix, C |
| 1990 | Software for laser measuring machine | System specification and development | 386/486-PC, MS-DOS, C |
| 1989 | Information system for a small travel agency | System specification and development | 386-PC, MS-DOS, ORACLE 5.1, C |
| 1989 | Measuring data collection and evaluation system for throttle-valve test bench | System specification and development | HP-1000, Fortran 77 |
| 1989 | Manufacturing control system "Optical fibre production" | System specification and development | VAX/VMS, Pascal, FMS, CDD |
| 1989 | Rubber rolls laser measuring machine | System specification and development | HP-9000, HP-Basic |
| 1988 | Data collection and evaluation system for laser measuring machines | System specification and development | HP-9000, HP-Basic |
| 1988 | Piston laser measuring machine | System maintenance and extensions | HP-9000, HP-Basic |
| 1988 | Small parts laser measuring machine | Specification, partial development | PC-AT, MS-DOS, Pascal, C |
| 1988 | Crankshaft laser measuring machine | System specification and development | HP-9000, HP-Basic |
| 1987 | Weather data archive system | System specification and development | HP-9000, HP-Basic |
| 1987 | Test bench steering and control system | Host-host communication | HP-1000, XMON |
| 1987 | Aluminum mill (USA) | System specification and development, project management | PDP-11/23, RSX-11M, Pascal, FMS |
| 1987 | Aluminum mill (South Korea) | System specification and development, project management | PDP-11/73, RSX-11M, Pascal, FMS |
| 1986 | Measuring data collection and evaluation system for combustion engine test bench | System specification and development | PDP-11/73, RSX-11M, Fortran 77, FMS |
| 1985 | X.25 Monitor XMON | XNET interface (HP-1000 X.25 SW) | HP-1000, RTE-A, Fortran 77, XNET |
| 1985 | DNC-twin-head bending machine | System development | Siemens SMP900 (8085), CP/M, PL/M |
| 1984 -1985 | Quality control and laboratory automation system QLS-11 | DBMS-programs, VMS system programming, VAX/VMS system management | VAX-11/750, VAX/VMS, Fortran, Macro-32 |
| 1984 | Relational database for minicomputer | System development | PDP-11, TSX+, Pascal |
| 1983 | FEM-System LOCA | IBM to CDC port | NOS/BE, Fortran |
| 1972 until 1983 | Scientific computation (electrical and magnetic properties of semiconductors) | Various scientific institutions | VAX-11 (VAX/VMS), PDP-11 (RSX-11), CDC, Algol, Assembler, Fortran, Pascal |