

Curriculum Vitae

name: Thomas Boor

born: 08.08.1959

education: electrical engineering studies
education as business programmer

it experience since: 1988

design methods: Objectoriented analysis & design with UML a.o.
Structured Analysis and Design with ISOTEC,
Databasedesign (ER-Modelling)

hardware: IBM DataBlades, Sun Fire, Sun Netra,
SNI RM- & MX-Series,
IBM RS/6000-SP2, SUN SPARCstation10/20
NIXDORF TARGON /35, IBM /370, PCs

operating systems: AIX (up to 6.3), Sun-Solaris 10, Linux (Ubuntu 12, Mint,
Arch-Linux, SuSe-Sles11/12),
SINIX SVR4 (up to Rel. V.4.3),
UNIX SVR3, DG-UX 5.4, SCO-UNIX 3.2, SunOs 5.4,
MS-DOS/WINDOWS, VM/SP, MVS/ES

programming languages: C++, C, Python 2.6, Java 1.7, php, Cobol

Protocols: SIP, SDP, RTP, RTCP, Radius, SNMP, http, Soap

networking: TCP/IP, BSD-Sockets, ONC-RPCs, RMI/JNDI, CMX

database-systems: DB2, Informix Online up to 10.0, Oracle 7.3, Postgres,
mySQL, ddb4, CICS, VSAM, MS-QLServer, MS-Access

development tools: Eclipse-SDK, Sun-Forte-IDE, Together, Rational Rose, dia
(UML-Tool) SNIFF+/Emacs, div. UNIX-Shells & tools, idle

publications: PolarPlot - Plotten von Funktionen in Polarkoordinaten
mit Sharp PC-1500/CE-150
Würzburg, 1987 (Vogel-Verlag, NE: T.Eikenkötter)

vi-Referenzhandbuch -
Das Lehr- und Nachschlagewerk zum UNIX-Standardeditor
München, 1996 (Verlag Prentice Hall, NE: Hutter/Pribas)

projects

(last recent first)

Design and Development of a Application Server for IOT (internet of things)

Customer: IBM Deutschland GmbH (IBM IP-Factory)

Trade: Telekommunikation

Role: Architect of development, Team with 3 developers

Software-Design with UML, Development in C++ under Linux of an application-server for the "internet of things", where up to 100.000 sensors/actors are connected to via gateways (fritzbox, raspberry, LORA-wireless net) and can be monitored via SIP-SUBSCRIBE oder controlled via SIP-MESSAGE by an arbitrary number of clients. Communication with sensores/actors encoded in JSON, communication with monitoring clients using XML-Bodies in SIP-NOTIFYs.

Multithreaded-Solution.

Duration: 3 Month (10/2015- 12/2015)

OS: Linux

Hardware: Standard-PCs

Programminglanguages: C++

Versioning: git

Tools: umbrella, gerrit, jenkins

Design and Development of a Status-Monitors for PBXes connected to a SIP-Trunk

Customer: IBM Deutschland GmbH (IBM IP-Factory)

Trade: Telekommunikation

Software-Design with UML, Development in C++ under Linux.

Application-Server, which receives DIAMETER-Requests of type LIR; submits a request at a Registration-Service to retrieve the connection and registration-state of the addressed PBX and transforms the response to a DIAMETER-Answer of type LIA, sent to the original requestor of the LIR.

Multithreaded-Solution.

Duration: 4 Month (06/2015- 09/2015)

OS: Linux

Hardware: Standard-PCs

Programminglanguages: C++

Versioning: git

Tools: umbrella, gerrit, jenkins

Extension of a SIP-Provider-Solution to support PBXes as SIP-Trunks

Customer: TSI GmbH, managed by IBM IP-Factory

Trade: Telekommunikation

Extend existing VoiP-Server to act as a SIP-Trunk for hosted PBXes with features like

- ChefSec (Dialog-Subscriptions)
- Closed User Groups
- Black/White-Lists
- Simutaneous Ringing
- Call-Forwarding
- Explicit Call Transfer
- Call Pickup
- PBX-specific Emergency-Calls
- TLS-Communication
- DSCP-QoS
- static contacts
- Bulk-Register acc. to RFC6140
- Maintenance-Announcements with a MRF
- Video- und Fax (T38) Support

Duration: 10 Month (09/2014- 06/2015)

OS: Linux

Hardware: Standard-PCs

Programminglanguages: C++

Versioning: git

Tools: gerrit, jenkins, phabricator, jira

Enable DS-Field-Support (QoS) in some Communications-Libraries

Customer: TSI GmbH, managed by KONTIP

Trade: Telekommunikation

Enabled setting of DSCP/TOS once on newly created communication-connections or as Ancillary-Data for Per-Paket-Qos, with IPv4 and IPv6. For ancillary-Data detection code on receiver-side (IPV6_RECVTCLASS, IP_RECVTOS) by parsing the cmsghdr.

Applied libraries for TCP, UDP, Radius, Diameter, http, MGCP

Duration: 2 Month (08/2014- 09/2014)

OS: Linux

Hardware: Standard-PCs

Programminglanguages: C++

Versioning: git

Tools: gerrit, jenkins, phabricator, jira

Rework of an existing MRF (IMS-Media Ressource Function)

Customer: terravoice.eu, managed by KONTIP

Trade: Telecommunication

Rework of an existing MRF with lots of new features

- IPv4 & IPv6 Streams from one application process
- dynamic memory management for local media files
- Proxiing Unicast-Live-Streams
- IGMP-Multicast-joins to proxy T-Home-Entertain-Media as Unicasts
- Writing of RADIUS-Accounting Packets
- Handling of Pinhole-Requests, to open Firewall-Connection (local IP/Port and remote IP/Port)
- Test-Website using webrtc, ajax, javascript and Java-applet to send a pinhole request from users machine
- DSCP (Differentiated services code point) settings per configuration to fulfill QoS requirements.

Duration: 5 Months (03/2014 - 07/2014)

Operating systems: Linux

Hardware: IBM power pcs, Standard-PCs

Programming language: C++

Versioning: git

Re-writing of a phone-number-porting-server for up to 200 millions of numbers

Customer: DTAG, managed by IBM

Trade: Telecommunication

Re-Design and re-development of a porting-server, which was based on DB/2 before.

Because of the huge number of entries to be managed and the required performance-boost a BigData-solution (totally InMemory instead of a rel. DB) was chosen.

Servers are cascaded in a tree to act as a cloud.

Functional and regression-tests written also in C++, part. using the boost-library

Duration: 6 Months (10/2013- 02/2014)

Operating systems: AIX, Linux

Hardware: IBM power pcs, Standard-PCs

Programming language: C++

Versioning: git

Launch of an Onlineshop for a Bicycle-Store

Customer: Radhaus Bürgstadt

Trade: Retail

Evaluation of some free CMS. Final decisions to use *Shoppingcart* (opensolution.org).

Translation (from en to de), Code-maintaining, versioning. New Graphic-themes, Payment-Types, Administration-Tool and more.

Editing of Diashows for retailers youtube-channel.

Duration: 2 Month (08/2013 – 09/2013), part time project

Operating-Systems: Ubuntu-Linux, MS-Windows-7

Hardware: Standard-PCs

Programming-languages: php

Versioning: git

Tools: shoppingcart, gimp, Typo-3

Evaluation of nested Virtualization using vmware hypervisor ESXi and Platform-Deployment

Customer: NGN Factory

Trade: Telecommunications

Evaluation of vmware-Hypervisors (ESXi-5.0 and 5.1) to check their ability to run nested.

The reason for nesting: to deploy a complex platform with n-locations and m-hosts on one physical machine to reduce hardware expenses.

Branches of the nesting tree:

ESXi-5.0 -> ESXi-5.1 -> VM(with SuSe-sles11/64)

ESXi-5.0 -> ESXi-5.0 -> VM(with SuSe-sles11/64)

ESXi-5.1 -> ESXi-5.0 -> VM(with SuSe-sles11/64)

Deployment of applications on the Vms at the leafs.

Duration: 4 Month (06/2013 - 09/2013)

Operating-Systems: vmware ESXi, SuSe-sles11

Hardware: IBM System X, Windows-PCs f. VSphere-Client / PowerCLI

Programming-languages: powershell

Versioning: git

Tools: IBM IMM, vmware-vSphere-Komponenten (Server, Motion,..)

Extension of Application-Monitoring for a distributed Internet-Access-Platform

Customer: DTAG, managed by IBM

Trade: Telecommunications

Design and development of monitoring components for new applications and hosts of the platform.

Central components interacting with TIVOLI-NETVIEW (for graphical presentation of the platform-status) written in C and Rexx, running under IBM z/OS. Remote components written in perl, running under z/OS, zOS-UNIX, zLinux, AIX and SuSe-Linux, which invoke snmp-commands to retrieve MIB-OIDs or which invoke requests of the monitored applications to measure availability, runtime & latency and failure rates.

Definition of new Views and groups in TIVOLI for the new monitoring-components.

Duration: 6 Months (01/2013 - 06/2013)

Operating-Systems: IBM-z/OS, z/OS-UNIX, zLinux, AIX, SuSe-Linux

Hardware: IBM 3090, IBM Power 7, Standard-PCs

Programming-languages: C, Rexx, perl

Versioning: ClearCase, git

Extension of a SIP-Stacks to provide Geodata-based Emergency-calls

Customer: DTAG, managed by IBM

Trade: Telecommunications

New SIP-Headers: Geolocation, Geolocation-Routing and User-to-User to provide emergency-calls according to callers location in a IMS-oriented, SIP-based VoIP-System following rfs / drafts like <http://tools.ietf.org/html/rfc6442> and <http://tools.ietf.org/html/draft-ietf-cuss-sip-uui-reqs-09>.

Duration: 3 Months (10/2012- 12/2012)
Operating systems: AIX, Linux
Hardware: IBM power pcs, Standard-PCs
Programming language: C++, lua, perl
Versioning: git

Testsuite to prove and measure RTP-Connections over Media-Gateways

Customer: DTAG, managed by IBM

Trade: Telecommunications

Writing of a toolset, that proves the availability of such a RTP-Connection (with D/A – and A/D-Conversion) and that measures runtime, latency and usage of jitter-buffers.

Duration: 3 Weeks (09/2012)
Operating systems: Linux
Hardware: Standard-PCs
Programming language: perl
Versioning: cvs

Rewrite of a LDAP-Client with authorization module

Customer: DTAG, managed by IBM

Trade: Telecommunications

Rewrite with new authorization module, Test against a open-ldap server with private and global dictionary.

Duration: 2 Weeks (08/2012)
Operating systems: Linux
Hardware: Standard-PCs
Programming language: C++
Versioning: git

Writing of a function-set to reduce rsp. to expand SIP-History-Info to ensure topology-hiding

Customer: DTAG, managed by IBM

Trade: Telecommunications

Reducing of History-Info to forwarding-related information to the targeted principal, excluding forking- and simring-informations regarding targetetd or other users.

Duration: 2 Months (07/2012- 08/2012)
Operating systems: AIX, Linux
Hardware: IBM blades, Standard-PCs
Programming language: C++
Versioning: git

Design and implementierung of a SIP-SUBSCRIBE-Servers in python to do cyclic notifications of MIB-Counters via SIP-NOTIFY

Customer: DTAG, managed by IBM

Trade: Telecommunications

Subscribe-Server in python using packets like Zope, Twisted and SipSimple. Retrieving MIB-Counters via snmpbulkwalk. Definition of two Event-Packages to send valid bodies with 'MIB over SIP'-content.

Duration: 1 Months (06/2012)
Operating systems: AIX, Linux
Hardware: IBM blades, Standard-PCs
Programming language: python
Versioning: git

Design and implementation of a PHP-Framework for easy creation of web-based text-adventures with support for graphics, video-clips and sound.

Customer: n.a.

Trade: n.a.

Framework written in In php, which reads php-stylish configuration files and creates interactive web-applications.

This framework was written as a tool for the students of the university of Darmstadt.

Duration: 1 Month (05/2012)
Operating systems: Windows-7, Linux
Hardware: Standard-PCs
Programming language: php

Planing, Design and implementation of a graphical Supervisor-app for a distributed VoIP-Solution

Customer: DTAG, managed by IBM

Trade: Telecommunications

Design of an android-app according to the MVC-Paradigm(Model-View-Contoller) with and underlying TransportAbstractionLayer for http and SIP-SUBSCRIBE to receive MIB-based-Information from the distributed system like SIP-Status-Codes, Dialog-States a.o..

Visualization of Live- and History-Data with android-typical-haptic (Finger-Zoom, Slider, long-tabbing-popups) with different Displaymodes (Polygons, Bar- and Piecharts and others) for 1 to n Server-Nodes.

Development of: Model- and Transport-Layer.

Duration: 4 Months (01/2012 - 04/2012)
Operating systems: android 3.1, Linux, AIX
Hardware: Motorola XOOM, Linux-Cubes, IBM-Blades
Programming languages: Java 1.7 (app), python 2.6 (Serverside)
Versioning: git
Tools: eclipse (Indigo)

Concept and Implementation of an internal ApplicationServer for a VoIP-System

Customer: DTAG, managed by IBM

Trade: Telecommunications

Development of an internal Application-Servers (AS) to remove, insert or change Sip-Headers according to a given configuration.

(E.g.: insertion of a 'Accept-Language'-Header acc. to the configuration of the caller.)

Using RadixTrees to do best matches for number ranges or domains in conf.

Duration: 2 Months (11/2011 - 12/2011)

Operating System: Linux, AIX

Hardware: power6, Linux-Cubes

Programming language: C++

Versioning: git

Tools: asciidoc, oodraw, umbrella, eclipse

Concept of a IMS-conformant SIP-MMTel-AS (Multi-Function AS)

Customer: IBM NGN CC

Trade: Telecommunications

Writing of a concept for a MMTel-Server, to provide multiple application-functions with only on SIP-Call. Addressing of the application-functions by meta-service-keys.

Tracking the invocations of the functions for requests and responses by so called chain-objects, respecting the functions needs of invocation (only initial request, initial transaction oder complete dialog).

Duration: 2 Months (09/2011 – 10/2011)

Tools: asciidoc, git, oodraw, umbrella

Writing of lua testscripts for a VoIP-Solution

Customer: IBM NGN CC

Trade: Telecommunications

Development of testscripts to simulate complex scenarios in a VoIP-Platform incl. Forking, Call-Forwarding and Simutaneous Ringing using a C++-coded SipStack providing transactions, dialogs and call-handling.

Duration: 2 Months (07/2011 - 08/2011)

Operating System: Linux

Hardware: Linux-Cubes

Programming language: lua, C++

Versioning: git

IPv6-Support for applications

Customer: IBM NGN CC

Trade: Telecommunications

Introducing of an INET-Adress-Object that manages IPv4 and Ipv6-Adresses.

Testing of extened applications in mixed mode, using applications and clients with IPv4 and Ipv6-Adresses.

Duration: 1 Month (06/2011)

Operating System: AIX, Linux

Hardware: power6, Linux-Cubes

Programming language: C++, perl

Versioning: git

Design and implementation of an application-supervising tool

Customer: IBM NGN CC

Trade: Telecommunications

tool, to do cyclic

- gathering via SNMP MIB-based Informations with formatting tables and substitution of magic OIDs with human readable text
- creating diffs between syslog-output to previous ones
- Delta-Monitoring of applications memory-management do allow measuring of memory needs of specific operations (indicated by the MIBs) and to detect memory-leaks

Duration: 1 Month (05/2011)

Operating System: AIX, Linux

Hardware: power6, Linux-Cubes

Programming language: python

Versioning: git

Design of a CSTA-Servers as a gateway to a SIP-platform

Customer: IBM NGN CC

Trade: Telecommunications

Softwaredesign (Components, Moduls, Interfaces) of a CSTA-Server to access single SIP-UserAgents (e.g. Phones) from CTI-Clients.

Usecases:

- Phone-Setting (Mute, Volume-setting, ...)
- Call-Functions (Call, Calltransfer, Hold, ...)
- Provisioning (DoNotDisturb, Call-Forwarding, ...)

Component-orientierted architecture with small Interfaces (Facettes)

Role: AD (Architect of development)

Duration: 1 Month (04/2011)

Tools: OpenOffice, git

Design and Implementation of an IMS-Media-Ressource-Function

Customer: IBM NGN CC

Trade: Telecommunications

IMS-conformant MRF to stream audio-/video-Assets, DTMF-detection, RTCP-Detection and proxying of voice data to a Voice Recognition system.

Streaming targets can be single user agents or a collection of those (e.g. to feed a matrix of video displays).

Multiplexing of Live-Streams (acquired via RSTP) for IP-TV.

Asset provisioning with a utility developed within this project.

Split of mrf functions acc. to IMS standards into controller and processor layer which may run in n:m relation.

Access to this MRF via SIP-INVITE or with a library-function.

Role: AD (Architect of development) with four developers

Duration: 6 Month (10/09 – 03/2011)

Operating System: AIX, Linux

Hardware: power6, Linux-Cubes

Programming language: C++

Versioning: git

IDE/Tools: scons, OpenOffice, asciidoc, doxygen, ClearQuest/Case, gstreamer, vlc

Development of a graphic tool for the Internet-Domain <http://www.wheel.com>

Customer: n.a.

Trade: n.a.

Development of a tool to convert still images in jpg-format into different resolutions with applying (visible) watermarks (indicating cc-sa-licence) and (invisible) steganographic

authentication stamps to prove publishers ownership.

Duration: 1 Month (12/2010)

Operating System: Linux

Hardware: Linux-Desktop

Programming language: C

Versioning: git

IDE/Tools: vi, libjpeg

Design and development of a dynamic Memory-Managements

Customer: IBM NGN CC

Trade: Telecommunications

An existing Media-Resource-Server (MRS) had to be extended by a dynamic memory-management to access assets partially in a multi-user-environment.

Slice-wise memory-access to read ahead lots of packest at once.

posix_fadvise-calls to animate the Disk-Controller ro prefetch soon needed data into the filecache.

Duration: 2 Months (09/2010 - 10/2010)

Operating system: AIX 6, Linux

Hardware: AIX-Power-PC auf Blade-Center, Linux-Desktop

Programming language(s): C++

Versioning: git

IDE/Tools: vi, scons, gstreamer, vlc, wireshark

Extension of an existing AS to provide Dialog-Subscriptions on groups

Customer: IBM NGN CC

Trade: Telecommunications

An existing Application-Server, which provided DIALOG-Subscriptions acc. to RFC-4235 had to be extended to provide DIALOG-Subscriptions on groups of principals.

Definition of groups by new database-tables. Evaluation of group-profiles instead of single principal-profiles to control access on information.

Duration: 2 Months (07/2010 - 08/2010)

Operating system: AIX 6, Linux

Hardware: AIX-Power-PC on Blade-Center, Linux-Desktop

Programming language(s): C++

Versioning: git

IDE/Tools: vi, scons, Volp-Phones (snom, OpenStage, Grandstream)

Developement of an application to read mifare-classic-RFID cards

Customer: IBM NGN CC

Trade: Telecommunications

Developemnt of a program to acces a Pegoda-Reader via usb and use it to read RFID-Card-Data of mifare-classic-chips. Reader compiled with a MIPS-crosscompiler to run embedded in a FritzBox (internet/wlan router).

On statechange a info html-page is updated and a SOAP-request to a WebApplicationServer is submitted.

Duration: 1 Month (06/2010)

Operating system: Linux

Hardware: Linux-desktop, fritzbox with MIPS-CPU

Programming language(s): C

Versioning: git

IDE/Tools: make

Development of a Back2Back-Useragents to Communicate with an IMS-MRF

Customer: IBM NGN CC

Trade: Telecommunications

To use an IMS (Internet-Multimedia-Subsystem)-conformant MRF (Media-Resource-Funktion) to play announcements and to collect user-responses (via DTMF or speech) had a minimal b2bua to be created, to separate the dialogs from the application to the MRF from the dialog held with the caller. This had to be done, as the MRF only can operate with established dialogs, while the communication with the caller had to take place in Early-Dialog mode.

Development of a Sip-InviteClient to contact the MRF. Once the SIP-Dialog is established, the application controls the MRF via in-dialog INFO Requests with the MRF responding as well using in-Dialog-INFO-Messages.

Early-Media-Simulation within the b2bua

Duration: 1 Month (05/2010)

Operating System: AIX 6.1

Hardware: IBM power6 blade center

Programming language: C++

Versioning: git

IDE/Tools: scons, OpenOffice, asciidoc, doxygen, ClearQuest/Case

Design & Implementation of a Call-Completion Application-Server for IMS-oriented VoIP-Systems

Customer: IBM NGN CC

Trade: Telecommunications

Design and Implementation of a distributed IMS-Application-Server for CallCompletion in a VoIP-System supporting non-SIP equipment

IMS-conformant AS for network based CallCompletion (CCBS, CCNR, CCNL) supporting equipment from PSTN-world according to

<http://tools.ietf.org/html/draft-ietf-bliss-call-completion-04>

with agent- and server-side.

Communication with other SIP-Servers to track user busy states acc. Rfc-4235 and registration states acc. to rfc-3680.

Using of an IMS-conformant Media Resource Function to do Announcements and a Third Party Callserver to fulfill call completions connecting caller and callee.

Role: AD (Architect of development) with nine developers.

Duration: 9 Months (08/09 – 04/2010)

Operating system: AIX, Linux

Hardware: power6

DB: DB2 Version 9

Programming language(s): C++

Versioning: git

IDE/Tools: scons, OpenOffice, asciidoc, doxygen, ClearQuest/Case

Design and implementation of an IMS-conformant Application-Server

Customer: IBM NGN CC

Trade: Telecommunications

IMS-conformant AS for user-related Features with flexible Service-Orchestration.

Dialog-Status-Tracking according to RFC-4235. First Features: Dialog-Subscriptions to enable Call-Completion, storage of Call-Lists to feature 'Spit-Blocking'.

High availability and dynamic load balancing.

New Design-Patterns: ComponentRepository and ComponentMediator.

Role: AD (Architect of development) with 8 developers.

Duration: 6 Months (01/09 – 06/09)

Operating system: AIX, Linux

Hardware: power6

DB: DB2 Version 9

Programming language(s): C++

Versioning: git

Tools: scons, OpenOffice, asciidoc, doxygen, ClearQuest/Case

Design and implementation of a Media-Resource-Server for RTP-Streams

Customer: IBM NGN CC

Trade: Telecommunications

Design of parallel and fast working media-server to provide more than 1000

RFC-3550-compatible RTP-Streams with one process under Linux.

Povray-rendered demo video-clips to be copyright-free.

Duration: 4 Months (08/08 – 11/08)

Operating system: Linux

Programming language(s): C++, python

Versioning: git

Tools: OpenOffice, asciidoc, doxygen, povray

ETSI-Application Server for Dialog-Subscriptions according to RFC-4235

Customer: IBM NGN CC

Trade: Telecommunications

Design and implementation of an etsi-compliant application server for Dialog-Subscriptions to provide functions like call completion, call pickup and informational notifies.

Documentation with asccidoc, held in the git-repository of the project.

Duration: 6 Months (02/08 – 07/08)

Operating system: AIX 5.3

Programming language(s): C++

Versioning: git

Tools: OpenOffice, ClearCase, asciidoc, doxygen

Extension of a VoIP-Proxy-Server to a PBX

Customer: IBM NGN CC

Trade: Telecommunications

Implementation of pbx-functions for the existing VoIP-Server-Solution like Display-Rewriting, Geo-Services and others.

Writing of Design-Papers with OpenOffice, Sourcecode-documentation with doxygen.

Duration: 5 Months (09/07 – 01/08)

Operating system: AIX 5.3

Programming language(s): C++

Database: DB2 Version 9

Versioning: git

Tools: OpenOffice, ClearCase

Security Module for german telcos

Customer: IBM NGN CC

Trade: Telecommunications

Design and implementation of a-Modul to meet latest lawful restrictions.

Feed of the interception orders with a SOA-server.

Duration: 3 Month (06/07 – 09/07)

Operating system: AIX 5.3, ubuntu-Linux

Programming language(s): C++

Database: DB2 Version 9

Versioning: git

Tools: OpenOffice, ClearCase

Serverprogramming for VoIP, Instant Message and Presence

Customer: IBM NGN CC

Trade: Telecommunications

Design and implementation of system- and networking-software in C++ under AIX and Linux.

Establishing a wikitool (mediawiki) as documentation-root.

Implementation of a testdriver for a SOAP-Server, validating the SOAP-responses against multiple XML-schemes (.xsd-files).

Duration: 9 Months (09/06 – 05/07)

Operation system: AIX 5.3, ubuntu-Linux

Programmin language(s): C++, Python 2.4

DB/DC: DB2 Version 9

IDE/Tools: cvs, git, OpenOffice, ClearCase

Development of an Intranet-Tool for a Web-based payment-system

Customer: Ticketcorner AG

Trade: Ticketing

Design of the user interface as a part of the technical documentation. Standalone-Tool in python to invoke the functions 'authorize', 'commit' and 'retrieve' with http or https.

Definition of the database relations for retrieval.

Duration: 2 Months (05/06 – 06/06)

operating system: debian-Linux, Windows XP

programming languages: Python 2.4

Database: mySQL 5.0

IDE/Tools: Idle, cvs

Development of a gateway to transmit RFID-carddata to an admittance system

Customer: Qivive GmbH

Trade: Ticketing

Design of the interface, UML-design papers, Programming of an asynchronous gateway to transmit the RFID-Data as whitelist data.

Duration: 1 Month (05/06)

operating system: Sun-Solaris 10

programming languages: C++

Database: Postgres 10

IDE/Tools: Eclipse 3.0, cvs

Design and implementation of a WebService for an internet distribution system

Customer: Qivive GmbH

Trade: Ticketing

Design of the WebService-Interface according to the features of the distributing system.

Setup of the technical infrastructure with tomcat-webcontainers and axis-SOAP-engines.

Programming of the WebServices as an ejb-client to an ATG-web- and EJB-container.

Testdrivers in java and python. Unittests with java, loadtesting with python-clients.

Writing of an executive summary, interface description, testcase collections and installation guide with openoffice.

Duration: 13 Months (02/05 – 03/06)

operating system: Sun-Solaris 8, Windows XP

programming languages: java 1.4, Python 2.3

Database: Informix 9.1

IDE, tools: Eclipse 3.0, ant, tomcat, axis, xerces, versioning with cvs

Software development for an internet application, search and payment modules

Customer: Qivive GmbH

Trade: Ticketing

Development for an internet application, programming of a fast searchengine with different search criterias and flexible handling of the search results.

Programming of all components from the JSP-sceendefinitions down to the database.

High performance due to the absence of any EJBs.

Enhancement of the payment solution for an access to the Swiss Post.

Duration: 4 Months (10/04 - 01/05)

Operating system: Sun-Solaris 8

Programming languages: java 1.3.1

IDE/Tools: Sun-Forte, ant, CVS

Design and implementation of a document generator

Customer: Qivive GmbH

Trade: Ticketing

Design of a meta-language to be embedded into programm code of different languages to generate program documentation out of the sources.

Imbedding of external images and textual information. Output as pdf documents.

Duration: 4 Months (05/04 - 09/04)

Operating system: MS-Windows-XP

Programming languages: Python 2.2

IDE/Tools: Python-IDE "Idle",
Reportlab-Toolset for PDF

Programming of an videograbber with motion detection

Customer: n.a.

Trade: n.a.

Coding of a videograbber (cyclic grabbing of still images) with persistance in the filesystem with the jpeg-library for a security company.

Includes motion detection with several strategies for edge detecting, each realized as a decorator to be chained as configured.

Edge detectors included: binomial laplace filter, roberts-cross-operator, erosion and dilatation.

Configuration with a web-interface (python-scripts as cgi)

Duration: 6 Months (11/03 - 04/04)

Operating system: Suse-Linux

Programming languages: C (due to customers requirement), python-cgi-Scripts

Porting and enhancement of a gateway between an inventory system and a distribution system

Customer: Qivive GmbH

Trade: Ticketing

Porting from Sinix to Solaris, enhancement of the design due to higher performance requested. Use of a new, fast cache-mechanism.

Duration: 8 Months (08/02 - 03/04)

Operating system: Sun-Solaris 8

Programming languages: C++ incl. STL

IDE/Tools: no IDE, Standard-UNIX-Tools, cvs

Design and Implementation of a high speed cache under Solaris 8

Customer: START Informatik GmbH

Trade: Ticketing

Design of a cache-mechanism using ipc-resources for administrative information and largefiles for the data. Combining of conventional hashing and of closed hashing.

Access to the cache via api or network (tcp).

Testprograms in C++ and python.

Documentation of concepts, program and installation with html.

Duration: 3 Months (04/02 - 06/02)

Operating system: Sun-Solaris 8

Programming languages: C++, Python 2.0

Implementation of a gateway between an inventory-system and the internet

Customer: START Informatik GmbH

Trade: Ticketing

Design of a distributed system with parallel access via tcp to the inventory system.

Multiple communication processes on different hosts for easy scalability.

Programming language independent interface (used with java, C++ and python-frontends).

Programming in C++ (incl. STL) using different design patterns

Duration: 9 Months (07/01 - 03/02)

Operating system: SINIX V.4

Programming languages: C++

Design and implementation of a multiplexer to connect more than 8000

Windows-Clients to an UNIX-application

Customer: START Informatik GmbH

Trade: Ticketing

Design with UML of a multiplex-system to meet the needs of the quantity structure with lowest resource-usage (less than 50 communication processes).

Programming in C++ without STL, some java-applets to visualize the systems state.

Python scripting to manage the documentation.

Duration: 6 Months (01/01 - 06/01)

Operating system: SINIX V.4

Programming languages: C++, Java, Python

Design and development of a systems library as an easy to use framework

Customer: START Informatik GmbH

Trade: Ticketing

Design of a library with the six packages:

- **Event** (for event driven programming)
- **InterProcessCommunication** (OO-Wrapper for the operating system mechanisms)
- **Network** (TCP, UDP and Stream-Sockets for C++ in a class hierarchy)
- **Communication** (universal communication classes for different layers)
- **Processing** (Framework to flow control)
- **Contextdatabase** (network database, realized with the above packages)

UML-Design, programming in C++ under Linux and ReliantUnix.

Contextdatabase and other testprograms to demonstrate the usage of the framework.

HTML-documentation with Together

Duration: 4 Months (09/00 - 12/00)

Tools: Together 4.1

Operating system: Linux, ReliantUnix 5.4

Programming languages: C++

Implemetation of a UNIX to host connection for the EXPO-2000

Customer: START Informatik GmbH

Trade: Ticketing

Design and implementation of a gateway between a BS-2000 host and an UNIX-Ticketing-System.

Communication via TCP/IP; Process model with a Dispatcher and multiple Co-Processes, running on a server-cluster.

High performance requirements managed successful.

Duration: 10 Months (11/99 - 08/00)

Operating system: SINIX V.4

Programming languages: C++

Writing of the WebPages for a horse-ranch

Customer: n.a.

Trade: n.a.

Writing of the static HTML-Pages, Converting of photos and movies from older media to electronic media.

Managing of all the stuff from requesting the domain up to maintain the site in the first month. Training of the users.

Duration: 2 Months (09/99 - 10/99)

Tools: vi, PhotoImpact, RealVideoGen, ws-ftp

Systemprogrammíng in a client-server project

Customer: START Informatik GmbH

Trade: Ticketing

Design and implementation of different libraries to use UNIX-Mechanisms in C++, like record locking, streams, sockets and others. Programming of wrapper classes.

Design of a tool to measure the program flow to analyze the performance of C and C++ legacy systems.

Writing the documentation as HTML for an intranet.

Duration: 4 Months (05/99 - 08/99)

Operating system: Linux, div. UNIX SVR4

Programming languages: C++

Design of a POS-Gateway

Customer: START Informatik GmbH

Trade: Ticketing

Design of the gateway to connect an existing POS-Solution to a Ticketing-System.

Definition of the interfaces.

Production of UML-Diagrams for the system.

Duration: 4 Months (01/99 - 04/99)

Tools: Paradigm-Plus, Visio

Implementation of communication gateways

Customer: START Informatik GmbH

Trade: Ticketing

Design and implementation of a framework library to connect a UNIX-System to a BS-2000 host according to RFC1006 (ISO over TCP).

Programming of some gateways based on that library.

Leading the team of four developers.

Duration: 3 Months (10/98 - 12/98)

Operating system: SINIX SVR4.3

Programming languages: C++ mit STL

Systemintegration and regressiontest in a telecom project

Customer: IBM Deutschland GmbH

Trade: Telecommunications

Definition and writing of automated regression tests, programming of a generator to generate EDIFACT-datasets with the shell.

Problem reporting with IBMs TeamConnection.

Assessment of architecture and programming of an external partner.

Duration: 9 Months (01/98 - 09/98)

Operating system: AIX 4.1, Windows-NT 4.0

DATABASE: Oracle 7.3

BK-System: LotusNotes 4.6, TeamConnection V2.0, MS-Office 95

Buildup of the quality management for a software development project

Customer: START Informatik GmbH

Trade: Ticketing

Definition of a software engineering process model specific to the company.

Writing of the UML-based documentation templates for each phase.

Constitution of quality rules, templates for testscenarios in four phases.

Defining the programming styleguide for C++ and embedded sql.

Conceptual design of a problem reporting tool.

Management of the activities of the QM-group (6 staff members),

Setup and leading of workshops and reviews.

Duration: 6 Months (07/97 - 12/97)

Design and implementation of a distributed message passing system

Customer: START Informatik GmbH

Trade: Ticketing

Design of a distributed OLTP-system for UNIX-Systems.

TCP/IP-network communication, inter process communication with shared memory (lockes with semaphores), process observing and loadbalancing for parallel services.

Design of an api-collection (with three abstraction layers) for the application programmers.

Analysis and design with UML. Source-Management with SNIFF+, versioning with rcs.

Writing of html documentation, shell generator to create man pages.

Duration: 12 Months (07/96 - 06/97)

Operating system: SINIX SVR4.3, SunOs 5.4, SCO-3.2, LINUX

Programming languages: C++

Design of a clearing system for multiple mandators

Customer: START Informatik GmbH

Trade: Ticketing

Analysis in cooperation with the product management.

Design of a light-weight-paradigma to realize clearing programs with C++ and esql-c.

Programming of some clearing programs.

Documentation in html.

Duration: 9 Months (10/95 - 06/96)

Operating system: SINIX SVR4.2

DATABASE: Informix-Online 5.0

Programming languages: C++, (INFORMIX-) ESQ/C

Integration of PointOfSales-Terminals into a ticketing system

Customer: START Informatik GmbH

Trade: Ticketing

Analysis and Design with the Coad/Yourdon Model.

Connecting the POS-Terminals via the serial interface, network communication with the acquirer via X.25

Duration: 9 Months (01/95 - 09/95)

Operating system: SINIX SVR4 (bis Rel. 2), SCO-3.2

Programming languages: C++

Implementation of an address administration for a local tourism organisation

Customer: TZH, Hamburg

Trade: Tourism

Implementation of an address administration based on an existing midrange solution.

Using MS-Access as database system with storage of the database on an unix host.

Access of the Windows frontends to the database via PC-NFS.

Design and programming of the MS-access application.

Duration: 4 Months (09/94 - 12/94)

Operating system: SINIX SVR4, MS-Windows

DATABASE: MS-ACCESS 2.0

Programming languages: MS-ACCESS-BASIC

Design of the cubical pricing system for a ticketing system

Customer: START Informatik GmbH

Trade: Ticketing

Design of the pricing system with sales and cancellation transactions.

Objectoriented analysis and design with the Coad/Yourdon model.

Definition of Classes and Interfaces, implementation of the system.

Duration: 7 Months (02/94 - 08/94)

Operating system: SINIX SVR4

DATABASE: Informix-Online

Programming languages: C++

Shellscript programming and setup of the software packaging with pkg

Customer: START Informatik GmbH

Trade: Ticketing

Programing of shell scripts. Writing of the pkg metafiles and of somes scripts to collect dynamically created files of the system.

Duration: 4 Months (09/93 - 01/94)

Operating system: SINIX SVR4 (bis Rel. 2), SCO-3.2

OLTP-System for several applications for a travel organizer

Customer: START Informatik GmbH

Trade: Ticketing

Design and programming of a distributed OLTP-System with ist own ORB.

Communication via TCP/IP and remote procedure calls.

Duration: 18 Months (02/92 - 08/93)

Operating system: SINIX SVR4, DG-UX SVR4, SCO-Unix

Programming languages: C++

User interface for a logistic system

Customer: Siemens AG

Trade: Transport / Logistics

Design of the user interface with an 3GL tool

Duration: 2 Months (12/91 - 01/92)

Operating system: SINIX V.2

DATABASE: Informix-SE

Programming languages: Rosi-SQL

Clearingsystem for an airline

Customer: Condor Flugdienst GmbH

Trade: Transport / Logistics

Design and implementation of an clearing program to clear affiliated airlines.

Duration: 3 Months (08/91 - 11/91)

Operating system: AIX

DATABASE: ddb4

Programming languages: C

Tools: Quantum-Catcher, UniScreen, DR-GEM

Marketing-Information-System for an airline

Customer: Condor Flugdienst GmbH

Trade: Transport / Logistics

Design and implementation of an customer information system with integrated adress marketing and mail services.

Training for the users, Writing of an user guide.

Duration: 9 Months (01/91 - 01/91)

Operating system: UNIX SVR3, AIX

DATABASE: ddb4

Programming languages: C

Tools: UniScreen, DR-GEM, Standard-UNIX-Tools

Clearing system for telecom services

Customer: IBM Deutschland GmbH

Trade: Telecommunications

Writing and executing of systemtest scenarios,
programming JCL, CLISTS and Edit-Macros on an IBM /370

Duration: 12 Months (01/90 - 12/90)

Operating system: MVS/ESA, VM/SP

Tools: CMS, ISPF/PDF, SCRIPT/VS, DCF

Maintenance Tool for telecom services

Customer: Deutsche Telekom

Trade: Telecommunications

Programming in Cobol, writing test scenarios, documentation

Duration: 6 Months (07/89 - 12/89)

Operating system: MVS

DATABASE: VSAM, CICS

Programming languages: DELTA (Cobol)

Tools: ISPF/PDF

Clearing system for DATEX-P

Customer: Deutsche Telekom

Trade: Telecommunications

Programming, testing.

Duration: 2 Months (05/89 - 06/89)

Operating system: MVS

DATABASE: VSAM, CICS

Programming languages: DELTA (Cobol)

Administration software for construction projects (DB)

Customer: Deutsche Bahn

Trade: Transport / Logistics

Design and programming of an PC application

Duration: 5 Months (12/88 - 04/88)

Operating system: MS/PC-DOS

DATABASE: dBase III+

Programming languages: CLIPPER, dBase III+

Tools: SPF/PC, Saywhat!?, R&R-Reportgenerator