



Using Firebird for Quality Management Software

An Experience Report

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Topics

- Short introduction to the software
- Need for database
- Development
- Distribution
- Customers



Introduction to Consic's software for Quality Management in production industries

Consic.



PMM – Gauge Management

- Why manage gauges?
 - Know what you have (hundreds/thousands of gauges)
 - repeatable, traceable results
- How?
 - periodically check that everything is OK → calibration
 - calibration interval → calibration date





Prüfmittel-Management - Registriert für Consic Software Engineering

Prüfmittel Typ Kalibrierung Extras Hilfe

Aktualisieren Optionen Zusatzfelder Inhalt

Suchen nach

Typ

Abstandslehre

Abstandslehre DINA 4

Anreißmeßschieber

Anschlagwinkel

Bügelmeßs. Aussen 0 - 25 mm

Bügelmeßs. Aussen 100 - 12...

Bügelmeßs. Aussen 125 - 15...

Bügelmeßs. Aussen 25 - 50mm

Bügelmeßs. Aussen 50 - 75 ...

Bügelmeßs. Aussen 75 - 100 ...

Bügelmessschraube

Einstelllehre

Endkasten LWS 1

Endkasten LWS 2

Endmaße einzeln

Endmaße Var.1 QW

Endmaße Var.2 QW

Endmaße Vari.1 Werk 2

Endmaße Vari.2 Werk 2

Endmaßkasten 1 Werk 2

Endmaßkasten 2 Werk 2

Endmaßkasten 3 Werk 2

Endmaßkasten QW

Endmaßkasten Versuch

Prüfmittel

PM-Nr. Zähle Datensätze

Nr. ...	Typ	Messbereich	Einsatzort ...	Hersteller ...	Status	
00001	Abstandslehre				Kalibriert	
00003	Abstandslehre				Kalibriert	
00004	Abstandslehre				Kalibriert	
00005	Abstandslehre				Kalibriert	
00006	Abstandslehre				Kalibriert	
00007	Abstandslehre				Kalibriert	●
00008	Abstandslehre				Kalibriert	
00009	Abstandslehre				Kalibriert	
00010	Abstandslehre				Kalibriert	●
00011	Abstandslehre				Kalibriert	
00012	Abstandslehre				Kalibriert	
00013	Abstandslehre				Kalibriert	
00014	Abstandslehre				Kalibriert	
00015	Abstandslehre		Fa. Schwenk	Angulus	Zu kalibrieren	●
00016	Abstandslehre		W1/AV	BBC	Kalibriert	
00017	Abstandslehre				Zu kalibrieren	●
00018	Abstandslehre				Kalibriert	
00019	Abstandslehre				Kalibriert	
00020	Abstandslehre				Kalibriert	
00021	Abstandslehre				Kalibriert	
00022	Abstandslehre				Kalibriert	
00023	Abstandslehre				Kalibriert	
00024	Abstandslehre				Kalibriert	
00025	Abstandslehre				Kalibriert	

Neu...

Ändern...

Ausgabe...

Historie...

Liste

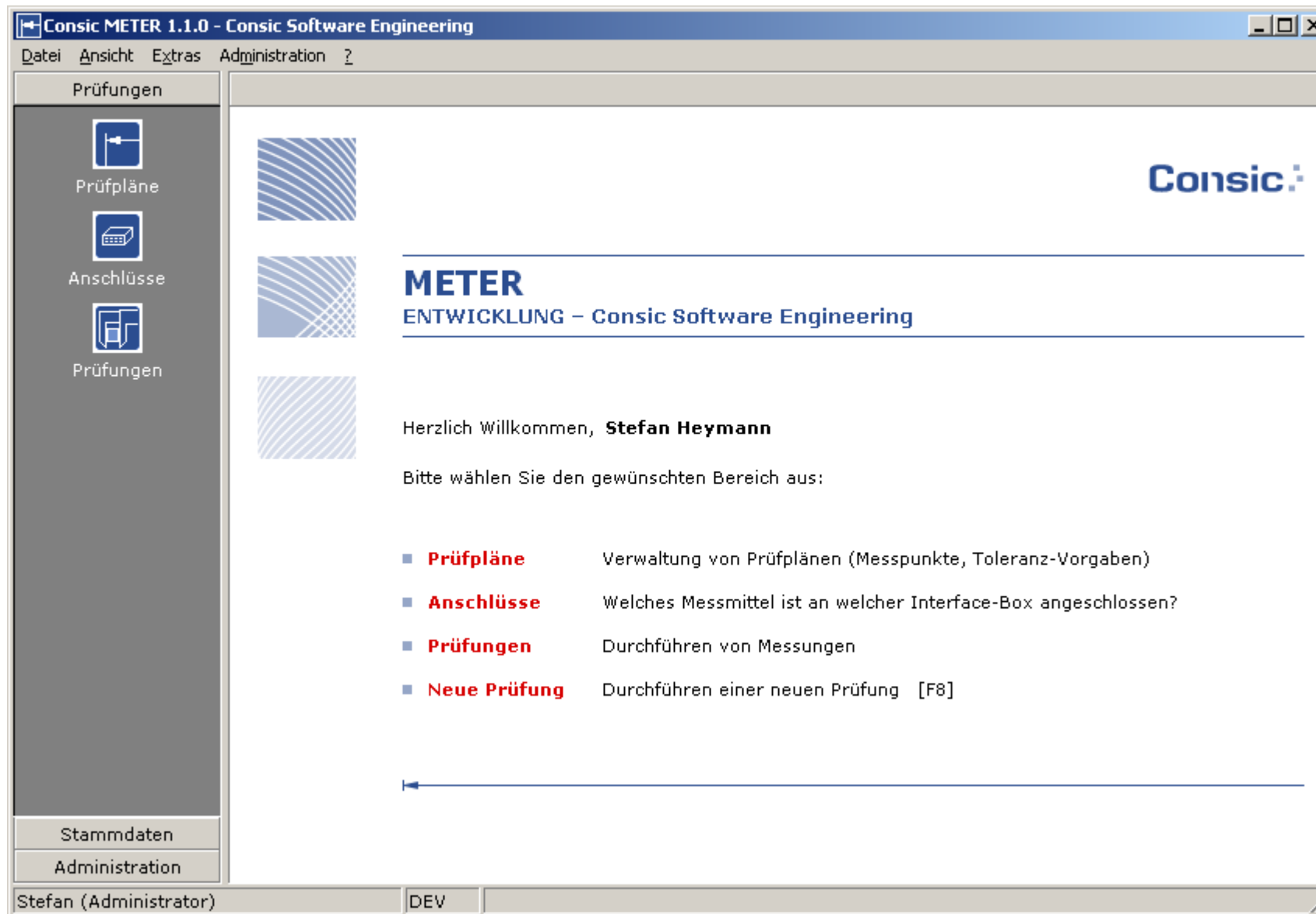
Datenblatt

Status: Verbunden Benutzer: SYSDBA (Admin) DB: C:\A\0017\PM4.0-Test\pmm.fdb Servertyp: Remote Servername: elias/3051



METER – Quality Checks

- Define parts and what to check (inspection features)
- Define specifications = tolerances
- Define which kind of gauge to use for testing
- Perform measurements
- Evaluate (good vs. bad parts)
- Statistics
- Statistical Process Control (SPC)





Need for Database



Need for Database

- Store data in a clean structure
- long-term storage (usage history, lot traceability)
- networked usage
- User not vendor-locked, no proprietary data format
- Users can access *their* data themselves
- „When we should go away, there is somebody there who can help you“



Firebird ideally suited

- Installation is easy
- No licencing issues
- Inexpensive (free licence)
- No tablespaces, load distribution, etc. needed
- Small, Lean, Fast, Seamless, Robust
- No/Low administration effort
- „Embedded“ Version
- Scalability



Features used

- Blobs (Text, Images, Documents)
- Stored Procedures
- Triggers
- Roles
- Domains
- „Embedded“ Firebird
- CURRENT_TIMESTAMP, CURRENT_USER
- GBAK, GFIX, GSEC



Non-Issues (so far)

- Views
- Character Sets (other than ISO8859_1)
- UDFs
- Exceptions
- Events
- EXECUTE STATEMENT

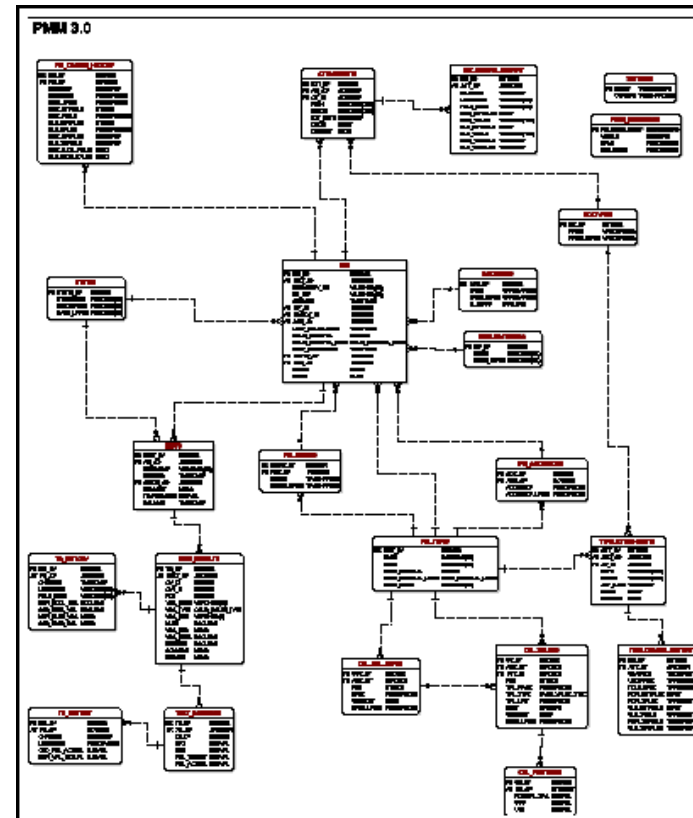
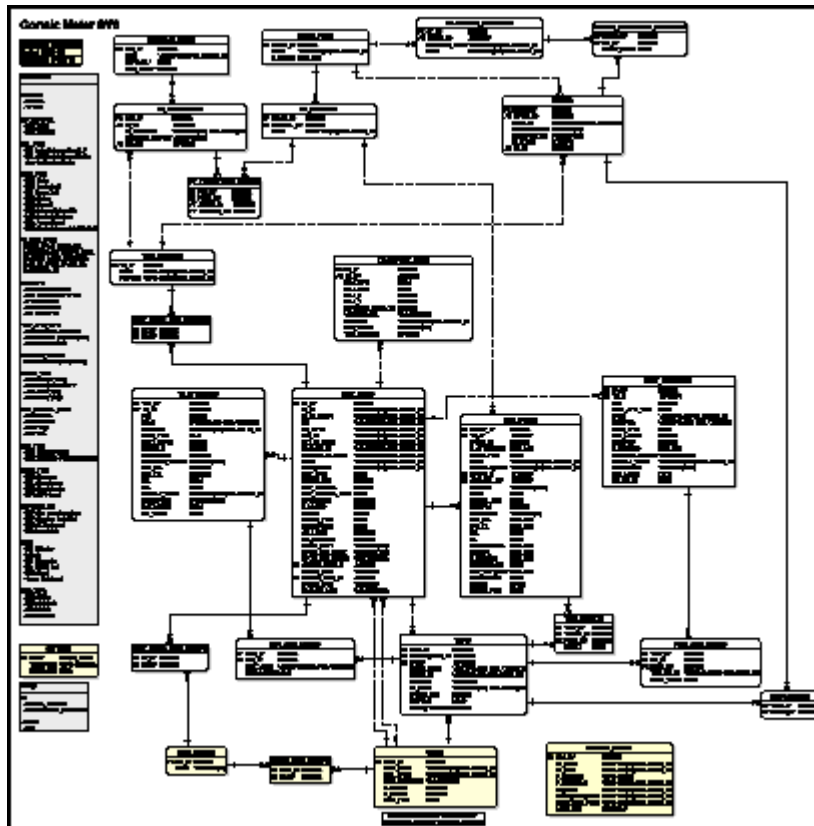


Development



Database Design

- ERM design with Datanamic DeZign
- DeZign has a Firebird 1.5 Personality





Programming

- Borland Delphi 7
- IB Objects
- Self-developed business objects generator generates business object classes from the tables

```
                // Table: TEST_PLANS
TestPlan := TTestPlans.Create;
TestPlan.LoadFromDb (aID);
TestPlan.FillChildTestPoints (...);
TestPlan.ArticleNo := '10061-01';
...
TestPlan.SaveToDb;
```



Licences

- Licencing: per Concurrent User of our software
- "software dongle" (encrypted or signed file): keeps the customer's address which is used on report prints etc.
- Licence File also contains other metadata about the licence (user limit, features, etc.)
- Enumerate Firebird users and count the PMM or METER users
- Problem: We should have more information than just user names (IP address, PC name, PC user name, application .exe path and name, additional connection info provided by application)



User Administration

- Ongoing Discussion: Use Firebird user management or manage users by application (table USERS)
- Advantages and disadvantages seem to be on the same level for both solutions



Advantages / Disadvantages

- + No extra programming needed
- + Security provided by Firebird
- + Fine-grained rights management
- + Access to CURRENT_USER variable
- ? One user management for all apps on the server
- Backup (GBAK) is incomplete, missing users
- Foreign Keys on USERS impossible / tricky
- Only user name, first name, middle name and last name as user data available
- Additional fields per user need a USERS table anyway, which must be kept in sync (no triggers available)
- Access to security DB increasingly difficult (FB 2.0: only via service interface)



Deployment



Evaluation Versions

- Deployed as single-user applications
- Based on "Embedded" Firebird
- Easy Click-Click-Click installation
(setup.exe created with InnoSetup)
- Application refuses to connect to a remote Firebird
- Missing Licence File = Evaluation Version
- Only slightly reduced feature set
(watermarks on prints, only 10 gauges storable)



Single-User Versions

- Also based on "Embedded" Firebird
- Problem:
 - Database file must reside on local PC
 - Users often ask for installation on network drive (exclusive file lock would not be a problem)
 - Backup more difficult (no GBAK)



Multi-User Versions

- German-language Firebird Administrator's Manual ■
- Simple and stupid Firebird administrator tool ■
- Recommend IbExpert for „real“ administration / development work
- Firebird installation explained by phone or manual
- Installation of user, empty database, create table script, alter table script, etc. with Administrator Tool
- Minimal Client Installation (fbclient.dll)
- INI file with connection details (database name, Username and Password)



Backup

- GBAK backup once or twice a day
- To a file server which undergoes tape backup
- Triggered by Windows scheduler or cron



Customer Experience



Customers

- No problem with Embedded Firebird -- Customers don't even notice it's there
- Migration from embedded to network is possible and has been done



Large(r) Customers

- The larger the company, the more difficult it is to get the Firebird service installed / accepted by IT
- InterBase and Firebird widely unknown (vs. MS/SQL, MySQL, Oracle, PostgreSQL)
- We are kind of working against this by sort of promoting usage of Firebird on Website, About Boxes, Product Descriptions
- What can be done to improve the situation? More 4-color ads in large IT magazines (c't, Handelsblatt, etc.)?
- Firebird White Paper (à la PHP White Paper)



Summary



Summary

- Firebird successfully used
- Great development possibilities
- Very robust
- No problems / no complaints at all until now



Wish List

- Better support for licencing / checking who's online and with what
- Keep users in the database, not in the server; make them foreign-keyable
- Improve "Branding" so that Firebird is better known



Links

- German-language Firebird Administrator's Manual and admin tool: www.consic.de/firebird
- My Firebird site: www.destructor.de/firebird



Thank You!

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