AST Software

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Let me introduce myself
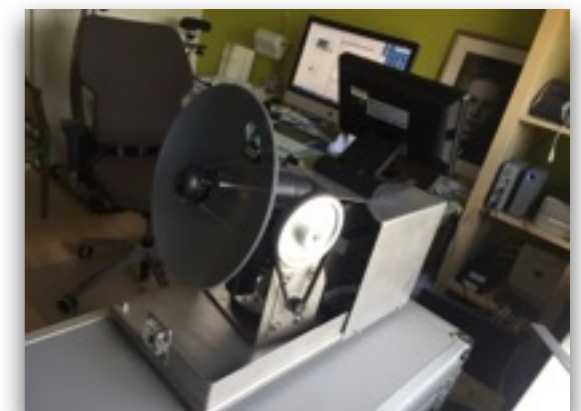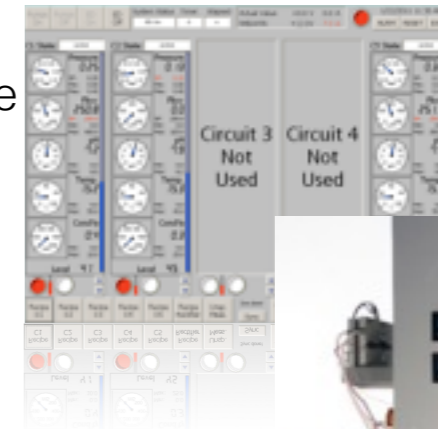
- Hans van Schaick - Independent Software Developer

- Started my career in 1978 on first generation of business microcomputers (Zilog Z80 based with OS like CPM - MPM - OASIS) developing administrative applications

- Joined a pan european company named Vicorp developing Bildschirmtext (D) and Minitel (F) systems as project manager in 1986

- Started an Interactive Voice Response company in 1988 developing Voice Mail and Call Centre Solutions

- After selling the IVR company, I joined an american company in 1999 as VP EMEA. This company developed tools for the development of Value Added Services in public (telephony) networks. Supporting Apps like GSM-Prepaid, Voice Mail and intelligent call routing.

- After this company became part of Lucent Technologies (later Alcatel-Lucent now part of Nokia Networks) a few colleagues started a new company for value address service network elements in 2005. I joined as a partner in 2006. However, when the crisis started in 2008 I decide to leave the partnership and look for something completely different……..

AST Software

- After many years in Telecommunications where the focus moved away from bespoke developments to off-the-shelf network elements I decided to go back to my roots

- AST Software looks for special projects and one of a kind projects. After some ventures in the Industrial Automation domain the focus is now on R&D and special projects.

- This has resulted in a broad mix of applications

    - A configurable Electro Dialysis system for Fuji Film Research and Friesland Campina R&D

    - Control of temperature of Cryo Coolers of Netherlands Institute of Space Research

    - iPad apps for temperature control of industrial ovens

    - A redesign of the control system of a food airation system for a manufacturer in the food industry

    - A report generator for maintenance engineers of High Voltage switching systems

    - Imaging and audio detection system for a special application

The toolset

- Software Development tools utilized in projects

  - C (Linux)

  - Objective C (..)

  - Siemens TIA Portal/Codesys with Structured Text

  - Python (Numpy, SciPy, Matplotlib)

  - openCV

  - XOJO

- Hardware platforms

  - Mac / PC

  - iPhone/iPad

  - Raspberry PI2

AST and XOJO

- Up till only incidental use for small utility apps

- Most customers use Windows and Realbasic/XOJO allowed me to develop on my preferred platform OSX

- With the support of iOS and Raspberry PI the tool becomes more interesting for R&D projects

- In 2014 Siemens Infrastructure and Cities division contacted me to see if I could help them create a data acquisition and logging tool for a multi year maintenance project. I decided to develop it using XOJO….

A reporting tool in XOJO

- Requirements:

  - Data entry by individual engineers onsite and offsite

  - no centralized infrastructure

  - Access to all data/reports by all individual engineers, online and offline

  - Windows 7 OS

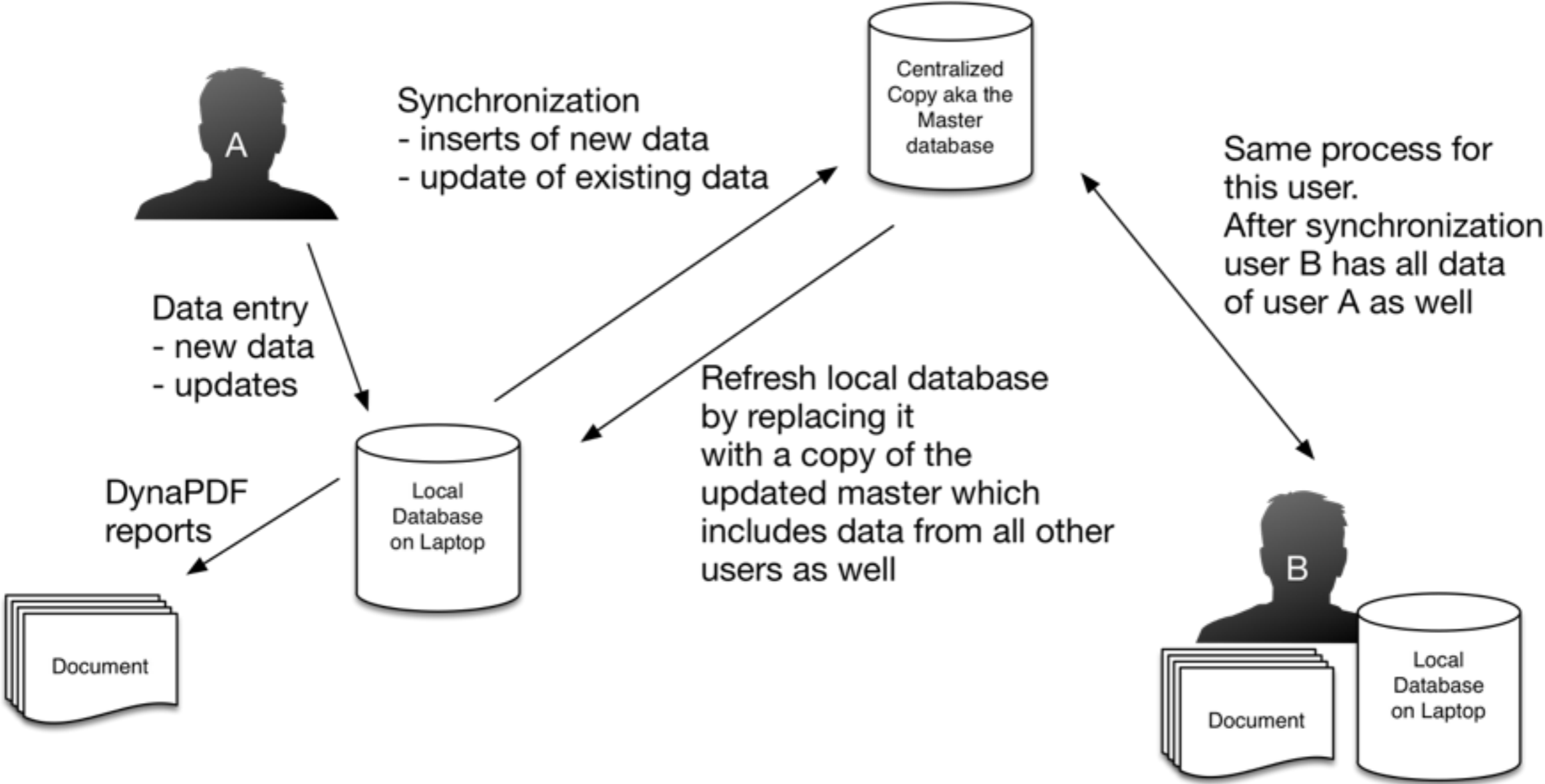 - Platform independent reports using PDF files

The application

- XOJO Application using standard SQLite

- reports generated using DynaPDF

- simple planning calendar using Jerémy Leroy calendar view

- planning selection using Treeview also by Jerémy Leroy

Challenges

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- Synchronization of databases between users

- Resilience against data loss and data corruption

- Zero maintenance by automatic updates of database structure if required

- Sketchy XOJO Knowledge

  - No optimal use of the toolset

  - Some design choices less optimal

The data

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Synchronization
- inserts of new data
- update of existing data

Centralized
Copy aka the
Master
database

Same process for
this user.
After synchronization
user B has all data
of user A as well

Data entry
- new data
- updates

A

Refresh local database
by replacing it
with a copy of the
updated master which
includes data from all other
users as well

DynaPDF
reports

Local
Database
on Laptop

Document

B

Local
Database
on Laptop

Document

Automatic restructuring
of the database
in case of addition or
deletion of tables and columns

All data copied before
synchronisation to
avoid data loss

All records timestamped
so newest data 'wins'

SQLite usage

- Using standard SQLite queries and updates

- No referential integrity of SQLite Engine utilized

- No usage of XOJO UI linkage to data source and data fields

- Attachments in the reports are inserted in a separate table as BLOB's

- Continuous update of tables triggered by .Action, .Update or .TextChange event on UI Elements. No SAVE button for main function.

UI and Database Integration

- Subclasses of all data oriented UI classes

    - CheckBox

    - TextArea

    - TextField

    - PopupMenu

- Events handled

    - TextChange/Action/Update

- Properties added

    - fieldName - filename in SQL database (could have used an existing property??)

    - isRefreshing - Boolean as semaphore for insulation of refresh method

- Methods

    - commit - save the content in the database

    - refresh - (re-)read data from the database

Demo and Afterthought

- After the demo and quick overview of XOJO Project

  - Design choices

    - Alternatives for database handling?

    - Alternatives for UI handling?

  - Other input?