

# Still TCL after all these years

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How i learned to stop worrying and to rely on  
frameworks, building blocks and tests

A short historical overview how i used TCL through the  
ages and where it helped me to successfully build  
industry reliable working software tools.

# The dark ages ...

- 1995 founded MATHEMA GmbH
- Sun SPARC 10 for about 12KDM
- C and X11, about 200 lines for window + button + colour stripes
- crash on different colour depth
- wrote little helpers, GUI tools, text processing for admin tasks, generated content for pagemaker layout pgm

# New horizons ...

- 1998 joined BIOTRONIK GmbH & Co. KG
- Knowledge on TCL, GUI development helped to being accepted
- Creating tools using Labwindows CVI
- Helped VLSI department on TCL with filters and helpers in chip development

# Invention of Home Monitoring

- Development of implantable Pacemaker with transmission antenna for ULPAMI
- Development of Patient Device RUC (remote unit controller), bridge to GSM
- Feasibility shown on XIth World Symposium on Cardiac Pacing and Electrophysiology, Berlin, June 27-30, 1999
- Task: write demo application for 6 implants

# The big challenge ...

578 ZDFtext Mi 17.10.01 23:13:31  
ZDFtext Multimedia  
Service

Herzschrittmacher sendet Daten an Arzt

Das amerikanische Gesundheitsamt hat einen Herzschrittmacher zugelassen, der ständig Daten über seine Arbeit sammelt und per Funk an die Basisstation außerhalb des Körpers übermittelt. Von dort gingen die Informationen gesammelt an den behandelnden Arzt, der so Informationen über den Zustand des Patienten erhalte.

Der Arzt könne selbst programmieren, wie oft der von der deutschen Firma Biotronik entwickelte Herzschrittmacher die Daten übermittelt. Zum Datentransfer genüge es, dass sich der Patient in einem Gebiet aufhalte, in dem Handybetrieb möglich sei.

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# Where TCL helped

- Produce readable and maintainable code
- GUI tools to ease administration tasks
- Network transparent operation
- OS independent development (SunOS SPARC -> Linux x86 -> Solaris x86 -> Linux on vmware SUN T4-4)
- Tclhttpd as webserver for monitoring
- Extension crosscompiled for 4 platforms

# Some demo views

The screenshot displays a TigervNC session titled "telem3:1 (oracle)". It features two main windows:

- m2oserver 1.21 - M20 (P)**: A terminal window showing Oracle database logs and commands. The logs indicate a user connection to DB DB31 and the execution of a query on the 'implanttyp\_fod' table. The terminal also shows the execution of 'db\_error\_log' commands.
- CDW Console 0.98 on telem3 (Production)**: A graphical application window with a menu bar (File, Edit, Servers, Start) and a toolbar (Alarm, GPRS, Logfile, Message, SMS, Status, Help). It displays configuration settings and a table of variables for the 'telem3' pool.

The CDW Console window shows the following configuration settings:

- Sumon3 input:
- Thor Process:

Below the settings, it displays "Showing variables in pool telem3" with the following data:

Variable	Value
input_sms	70 151 392 274 110 117 236 584 639 581
input_ll	96 208 328 290 98 47 22 12 4 0
input_t3p	4637 6060 10930 8677 3973 2391 4005 11619 13933 13826
input_per_hour	4803 6419 11650 9241 4181 2555 4263 12215 14576 14407
sumon_queue	4 25 162 8 0 0 12 6091 5959 955
thor_queue	1486 3296 1256 0 0 1210 5626 6545 4249 596
thor_per_hour	5926 20961 8905 5780 5677 9986 9694 9657 8581 3497
input_per_day	84310 109730 108677 106724 105986 108410 109123 108081 109153 109756
thor_per_day	85187 109079 108380 105341 105892 108129 108864 108458 108504 109080
thor_begin	13.11.2013 09:40:45
thor_end	13.11.2013 09:40:46
thor_actual	processed: 142559876
thor_todo	518
thor_begin2	13.11.2013 09:34:34
thor_end2	13.11.2013 09:34:34
thor_actual2	processed: 142559874
thor_todo2	153

The terminal window shows the following output for the 'db\_error\_log' command:

```

oracle@telem3:~$ db_error_log "bye bye ..."
oracle@telem3:~$ db_error_log ""
oracle@telem3:~$ db_error_log ""
oracle@telem3:~$ db_error_log ""
oracle@telem3:~$
  
```

The terminal also displays a table of 15 rows selected, with columns: Date/Time, Sumon Queue, SMS Queue, SMS Queue 2.

Date/Time	Sumon Queue	SMS Queue	SMS Queue 2
15.11.2013 10:48:06	6	518	153

The terminal prompt is AUTO@DB31 >.

# More demos

- eti -> eti2 -> [miniweb editors/wiki](#)
- tool -> tools frameworks
- toolserver -> testserver -> [snitwebserver](#)
- moni to produce monitoring dashboard



# Building blocks that helped

- tclhttpd tcllib -> everything was prepared!
- Oratcl tequila sqlite -> rock stable! (2 of 3)
- ttk::notebook tablelist -> beautiful GUI
- iTcl Xotcl snit -> understand the java folks
- Freewrap -> apps for inhouse customers
- tcltest -> assurance system running, TDD

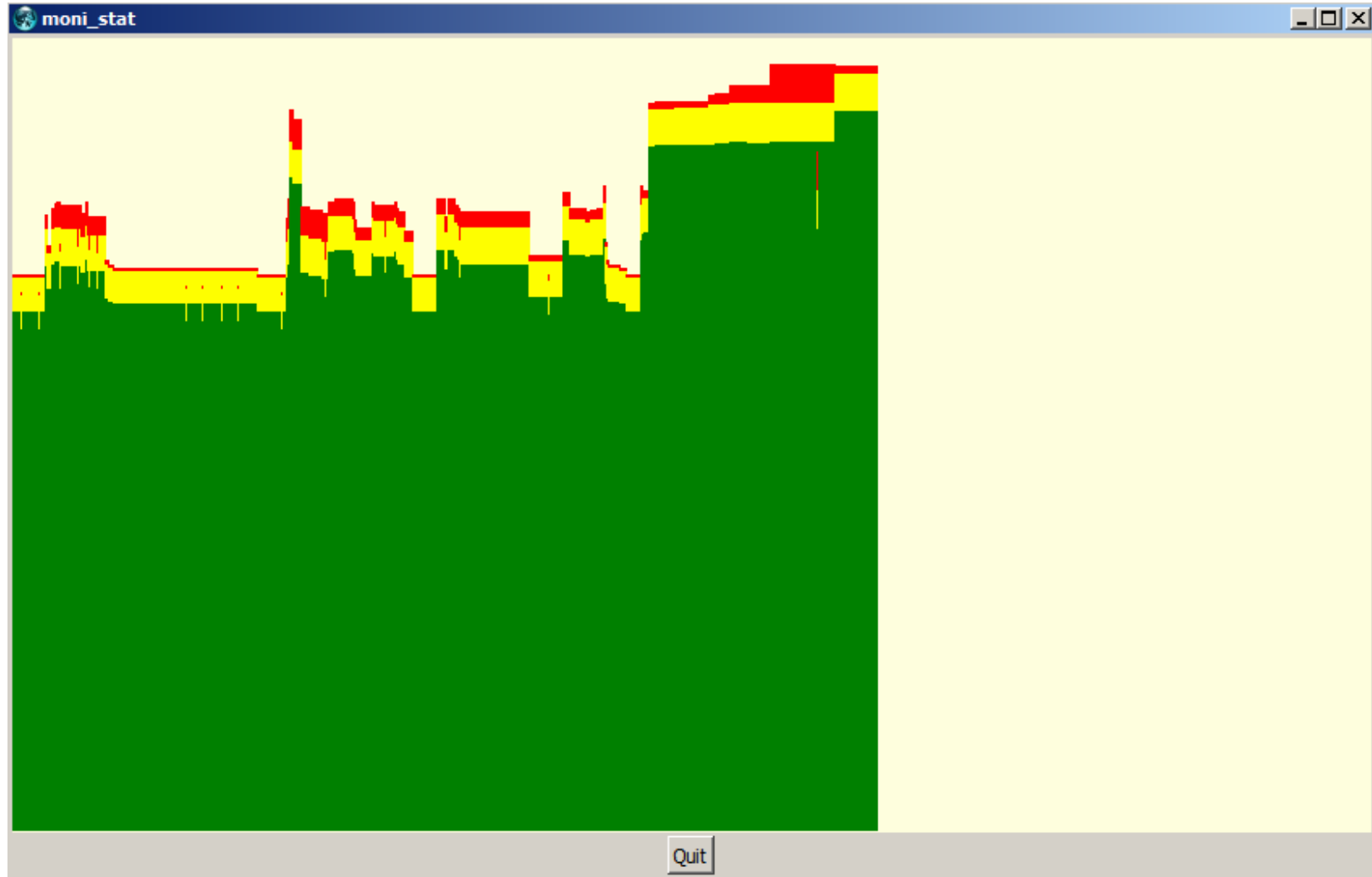
# continuous monitoring

- moni to do tests locally
- testserver to distribute results
- moniweb to produce dashboard as ONE big wiki HTML page

# Continuous development, TDD

- moni to wrap tcltest for user tests and IT staff
- Test driven development

# Development cycles



# Why testing?

- Testing makes you aware whether expectations / requirements are met by your implementation
- Gaining intelligence all time during development through tests!
- The problem is not that there are problems. The problem is expecting otherwise & thinking that having problems is a problem. —T. Rubin

# Thank you

- for your attention
- for a fantastic community
- for the organization

# A wish came true ?

- `#!/usr/local/bin/tclsh`
- `# sas - Small Application server - Snit Application Server`
- `if {$argv == ""} {puts "appname please!"; exit 0}`
- `package require snit; package require sqlite3`
- `sqlite3 db $env(HOME)/etc/dbs/[lindex $argv 0].db`
- `proc runpage {wiki page} {db eval {select value from tt  
where wiki = $wiki and key = $page} x {set code  
$x(value)}; eval $code}`
- `runpage main boot`
- `runpage main init`

# Environment for sas apps

- DB contains “pages“ in a wiki with key-value pairs
- Create table for app APPNAME in path  
\$HOME/etc/dbs/APPNAME.db like so:
- CREATE TABLE tt (id id, key text, value text, wiki text,  
first date, count number, last date)
- Pages main:boot and main:init are started first
- Extensions for jobs, ping tests, wiki, webserver ...
- freewrap sas.tcl to create universal binary