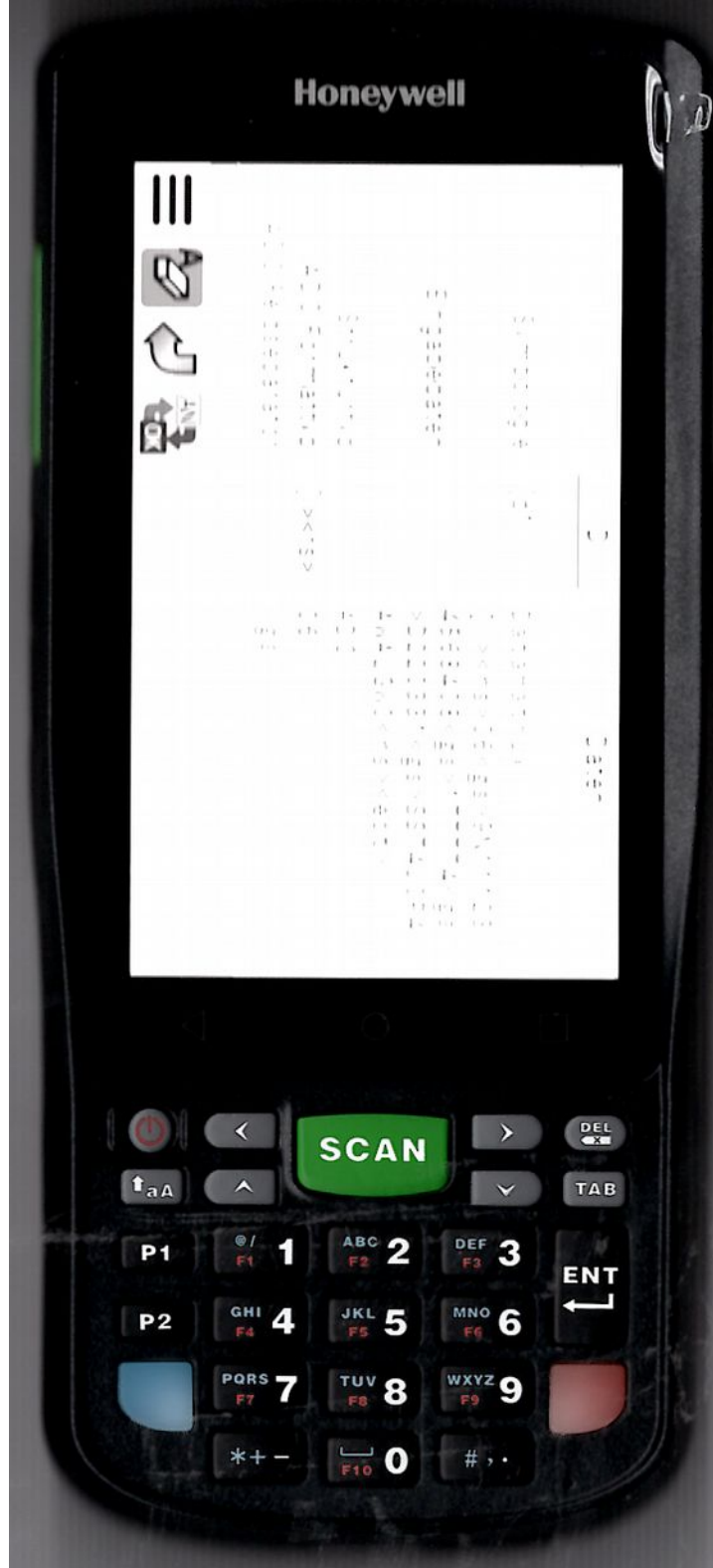


(Professional) Android Bar Code device application

- Company Elmicron
- Desktop Application ScanLink
- Android Device
- User Interface: Design,
Finger Scroll, Pinch to Zoom,
Menu
- Internal Image Scanner
- TCL Activities & Wish List

Harald.Oehmann@elmicron.de
Berlin/Germany
Chat: oehhar, Wiki: hao





Company Elmicron

Auto ID
→ Barcode and RFID
→ ISO Standards

5 Employees

TclDevKit Licence



ScanLink: Bar Code Data Analysis

- TCL/Tk8.6.9, Ttk, Windows, Windows CE
- Tablelist widget with scrollbars.
- Adjustable Font Size with Menu

```
font configure \  
    MyFont -size 32
```

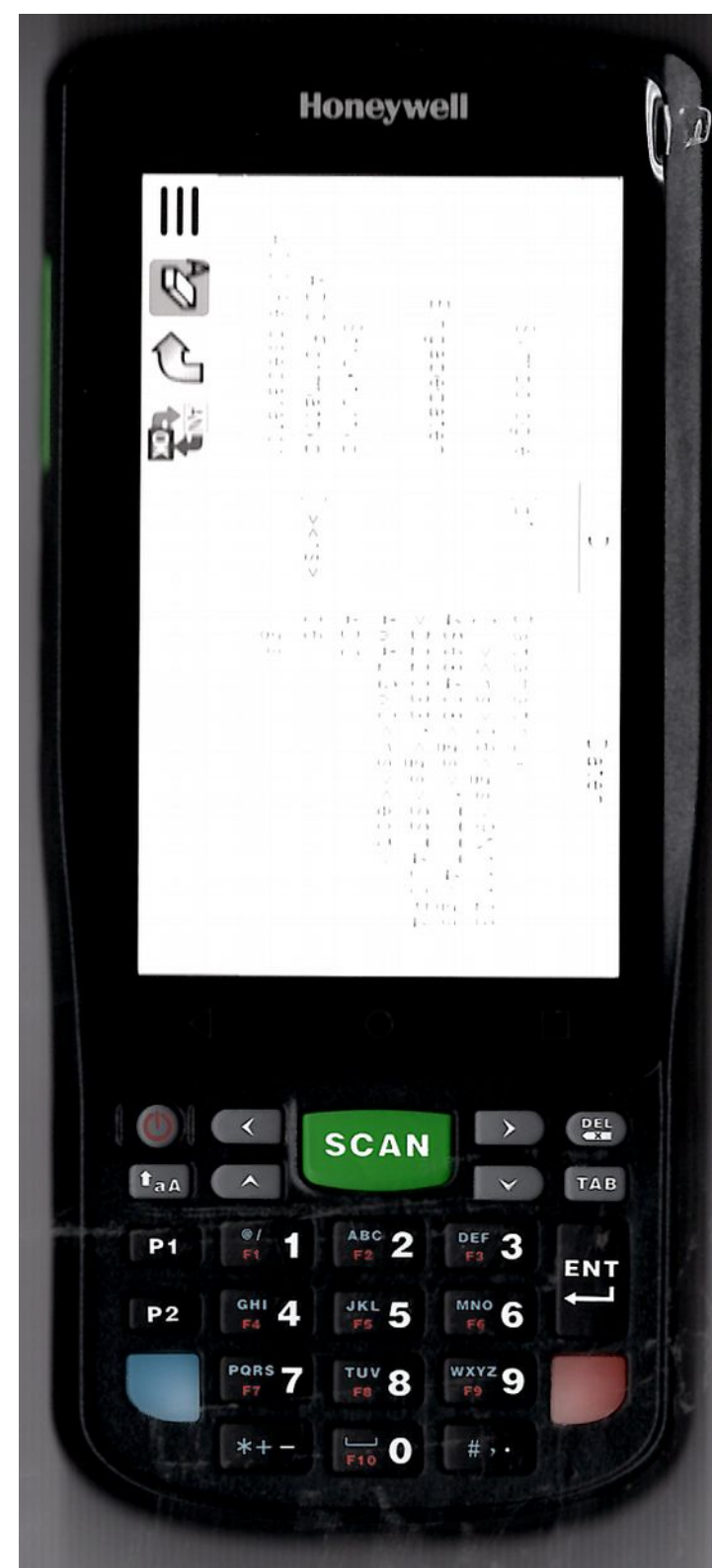
The screenshot shows the Elmi-ScanLink Verify application window. The title bar reads "Elmi-ScanLink Verify". The menu bar includes "Datei", "Ansicht", "Geräte", "Parser", "Konfiguration", and "Hilfe". The "Ansicht" menu is open, showing options like "Eingabefeld Steuerung", "Zeige", "Ansicht erzeugen", "Zeichengröße", "Scanner triggern", "Eingabe neu", and "Log löschen". The "Zeichengröße" sub-menu is also open, displaying a list of font sizes: Standard, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17 (selected), 19, 21, 24, 32, 48, and 72. The main window displays a table with the following data:

| ID | Daten | Kommentar |
|----------|-------|--|
| 06 | <rs> | ADC Format # 1 vom Type ASC: ANS MH10.8.2 DI |
| <gs> | | |
| 11 | | Labeler ID Issuing Agency: IFA Interpretierte Daten: _PZN |
| 12345684 | | Pharmacy Product Number (PPN) mit PZN |
| 08 | | |
| TTT4 | | |
| | | Interpretierte |

At the bottom of the window, there is a toolbar with icons for file operations and a status bar showing "Zeichenaröße 17". The Elmicron logo is visible in the bottom right corner.

From Windows CE to Android 7

- Honeywell EDA50k Android 7 Barcode Terminal
- Use internal Image Scanner
- borg displaymetrics:
density 1.5 densitydpi 240 width 480
height 800 xdpi 160.421 ydpi 160.0
scaleddensity 1.5 rotation 0
- In ETCL 2014, other project was shown
using compilation
- Now use great bones build environment
<https://wiki.tcl-lang.org/page/Example+setup+of+AndroWish+SDK+on+WIndows+10>



UI Design

- No viewport functionality: manage on my own
- Center area with scrollbar and moving with one finger
- Always visible Buttons below. Height always 1cm
- Button menu
- Font size resize with two fingers pinch (does not resize buttons)

- Subwindows all full screen
- Auto-rotation
- Uses same source-code as desktop application

| | ID | Daten | Kommentar |
|-------------------|-----|---------------------------|---|
| ▼ | | | 1. Scan mit Honeywell buildin s |
| Symbologie: |]d1 | Datamatrix | Symbologie Datamatrix vom Leser |
| Eingabedaten: | | +A99912345/99015Y0 X3C | |
| Strukturtyp: | | HIBC | Health Industry Bar Code |
| Kennzeichner: | + | A999 | Labeler ID Issuing Agency: HIBC Interpretierte Daten: LHA999 |
| Artikel: | | 1234 | |
| Verpackungsindex: | | 5 | Logistische Verpackungsebene 5 |
| Verfallsdatum: | / | 99015 | Interpretierte Daten: 1999-01-1 |
| Charge: | | Y0X3 | |
| en Sekundärcode: | | C | Modulo-43 Prüfzeichen korrekt |
| ▼ | | | Resümee des letzten Scans |
| Resümee: | | | HTBC Struktur Ok |



Finger scrolling for tablelist, ...

- Switch viewport off:
sdltk touchtranslate 3
- Do two bindings for
finger-scroll enabled
tablelist, canvas, text
widget
- For tablelist, switch
selection off
(only one possible)

```
set table [tablelist $base.t ...]
bind [$table bodytag] <2>\
    "$table scan mark %x %y"
bind [$table bodytag] <B2-Motion>\
    "$table scan dragto %x %y"
...
for {set row 0}\
    {$row < [$table index end]}\
    {incr row} {
    $table rowconfigure $row -selectable 0
}
```

Pinch to Change Font Size

- Bind function
- State values:
0:Motion, 1:Start, 2:End 1st Finger, 3:End Both Fingers
- Unit of motion is ???
- Font size values are small (3) even for huge screen resolution
- Change unit which felt good for font size (points) was 10/ screen width

```
bind . <<PinchToZoom>> {+PiZo %x %s}

proc PiZo {X State} {
    switch -exact -- $State {
        1 { # Start
            set Value $X
            set FontSize $CurrSize
        }
        0 - 2 { # Motion, End
            if {$Value > 0} {
                NewFontSize [expr {
                    $FontSize
                    + ($X - $Value) * 10
                    / [wininfo screenwidth .] }]
            }
        }
    }
}
```

Scalable Button Images using svg



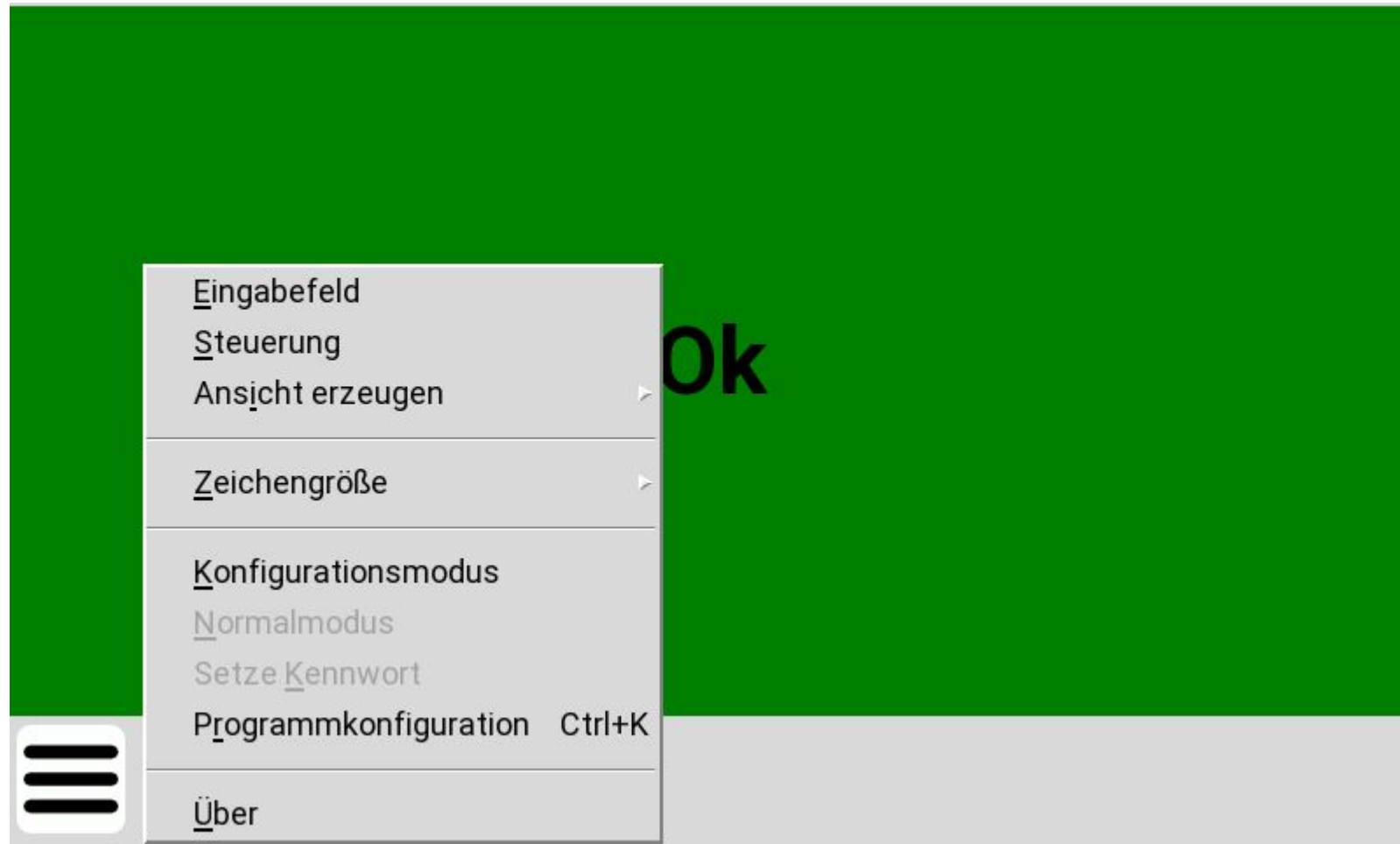
- Button image without text:
1cm height
- Button image with text:
scale to text height
- High performance impact: image is loaded twice
- TIP 545 loads only once using
"-scaletoheight"

```
# Find 1cm in Pixels
set ButtonHeight [expr {
    entier(
        [dict get [borg displaymetrics] ydpi] \
        * 10 / 25.4) }]
# Scale image to 1cm
image create photo ImgMenu -file menu.svg
set HeightOri [expr {
    double([image height ImgMenu])}]
ImgMenu configure -format\
    [list svg -scale [expr {
        $ButtonHeight / $HeightOri}]]

# With TIP545:
image create photo ImgMenu -file menu.svg\
    [list svg\
        -scaletoheight $ButtonHeight]
```


Menu

- Use `ttk::menubutton` instead of `toplevel` menu
- Changed `Bwidget` to (wiki: `bwidget`):
 - > Allow to bind mainframe window to a button
 - > Support all menu types on first menu level
- Project: Android-like menu widget (for `BWidget`)



Build-in Barcode Imager interface

- On Windows CE, it was always a piece of custom C code, loaded into TCL as DLL
- Android uses Broadcasts (in/out) for communication
- Translating Java code to Androwish was difficult but possible:
Wiki page: [AndroWish: create "borg broadcast ..." following Java Code] -> no custom Java/C code required...

```
RegisterReceiver(  
    barcodeDataReceiver,  
    new IntentFilter(  
        ACTION_BARCODE_DATA));  
...  
private BroadcastReceiver  
barcodeDataReceiver  
= new BroadcastReceiver() {  
    @Override  
    public void onReceive(  
        Context context, Intent  
        intent) {  
        ...  
    }  
}
```

```
borg broadcast register\  
    ....BARCODE_DATA callback  
...  
proc callback {  
    CodeIn ActionIn URIIn TypeIn  
    CategoryIn lDataIn  
} {  
    ...  
}
```

Final Application

- Scan a Code
- Show overview
- Show Analysis
- Save as PDF (pdf4tcl)
- Show PDF (Activity)
- Exit via task view, exit-command gives black screen
- Background via "□": deactivate scanner, remove from binding

Ok

| | ID | Daten | Kommentar |
|-------------------|-----|---------------------------|---|
| ▼ | | | 1. Scan mit Honeywell buildin s |
| Symbologie: |]d1 | Datamatrix | Symbologie Datamatrix vom Leser |
| Eingabedaten: | | +A99912345/99015Y0 X3C | |
| Strukturtyp: | | HIBC | Health Industry Bar Code |
| Kennzeichner: | + | A999 | Labeler ID Issuing Agency: HIBC Interpretierte Daten: LHA999 |
| Artikel: | | 1234 | |
| Verpackungsindex: | | 5 | Logistische Verpackungsebene 5 |
| Verfallsdatum: | / | 99015 | Interpretierte Daten: 1999-01-1 |
| Charge: | | Y0X3 | |
| en Sekundärkode: | | C | Modulo-43 Prüfzeichen korrekt |
| ▼ | | | Resümee des letzten Scans |
| Resümee: | | | HIBC Struktur Ok |

```
bind . <<WillEnterBackground>> +ScannerUnregister
```



Thank you to
Mentors
Wendy!

TCL/Tk activities

- Bwidget (TIP 454: scrollframe empty if last child unmapped)
- msgcat: TIP499: custom locale search list, TIP490: TCLOO, TIP412: dynamic language+packs
- Core Windows socket driver, TCLWS, Rivet
- MS-VC6++ PSDK2003SP1 TCL/Tk make
- Zint Bar code generator TCL interface
- Img patch (write resolution field of bmp)
- TIP529: add -metadata dict to image:
Resolution, properties,
intermediate representation (SVG) for quick scaling



Yea !

TCL Wishlist

- Themed tabbed widget with scrolling of tabs
- List equal ($\$L1 \text{ leq } \$L2$), also in switch
- Dict equal -noorder/-order
- Windows 8 "App" Theme
- Android Theme
- Transparency in Tk
- Auto-scale images in buttons with text or external constraint