Coffee Without Java

Making an espresso machine which runs on Tcl

Why do this?

Why make an espresso machine?

Why have a tablet?

Making Good Espresso is very difficult

- Lack of feedback

and

- Lack of control

Lack of feedback

- Traditional machines tell you temperature and pressure
- And both are lies

Pressure

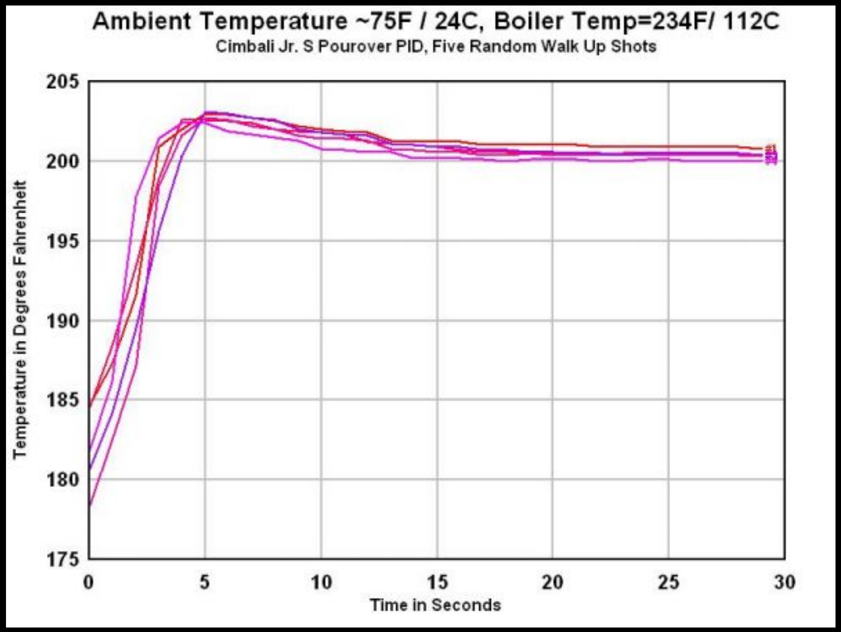
"Pump pressure", not coffee pressure, so always ~9 bar

Temperature

Boiler temperature is stated

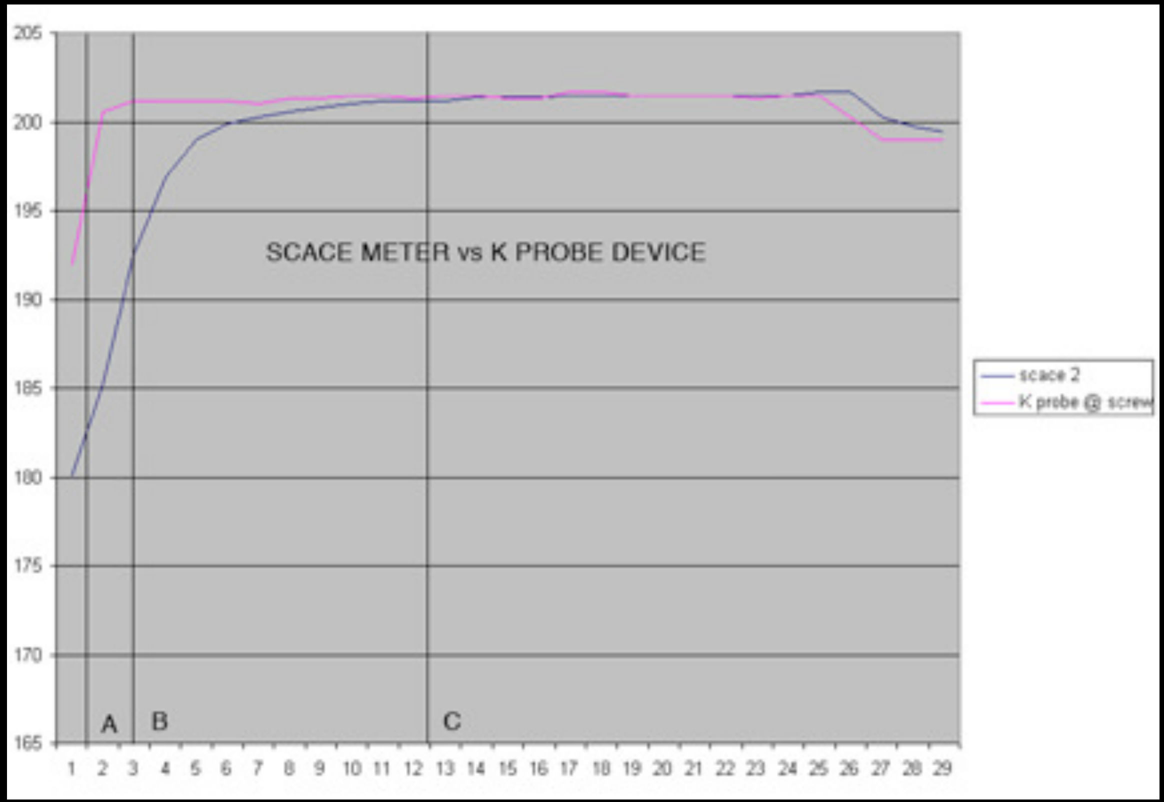
Interaction effects are ignored

Latency is high



Ambient Temperature ~75F / 24C, Boiler Temp=234F/ 112C

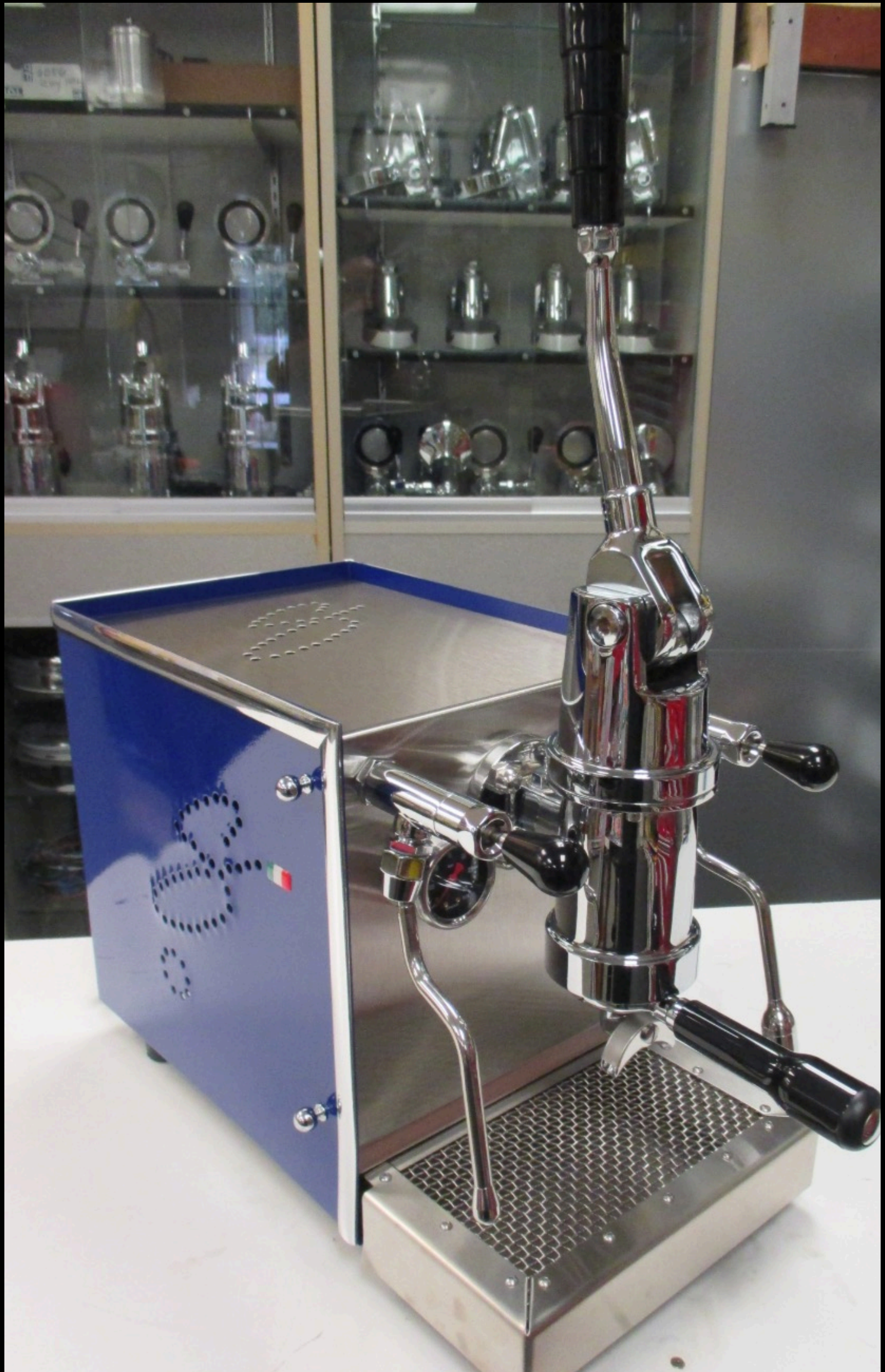
Cimbali Jr. S Pourover PID, Five Random Walk Up Shots



SCACE METER vs K PROBE DEVICE

Before “semi-automatic”

There were “Lever” machines



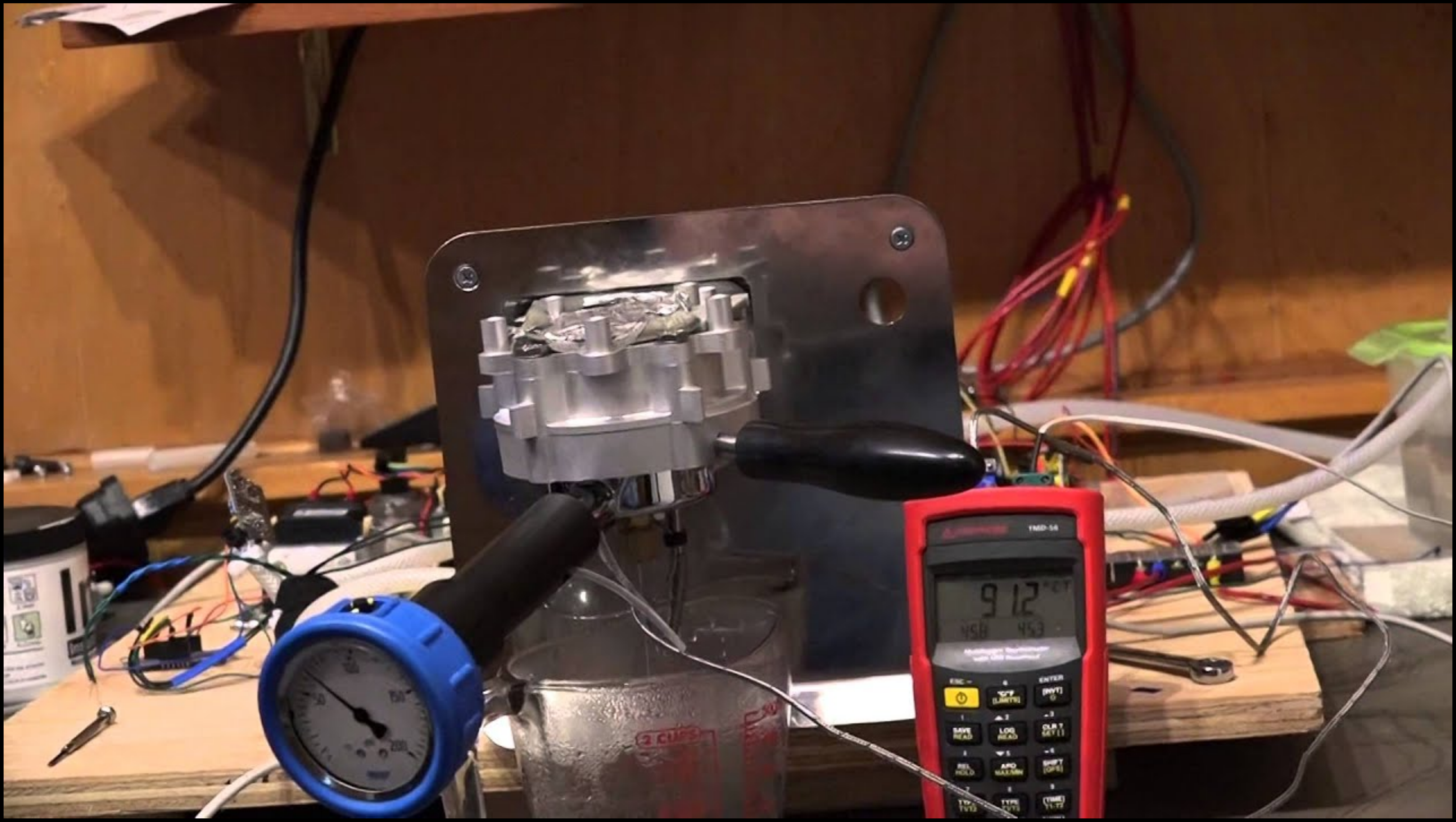
with manual control over *flow and pressure* and reporting the *real pressure* on the coffee puck

Lever machines aren't dead

they can make extraordinarily good coffee

but they do require skill to use

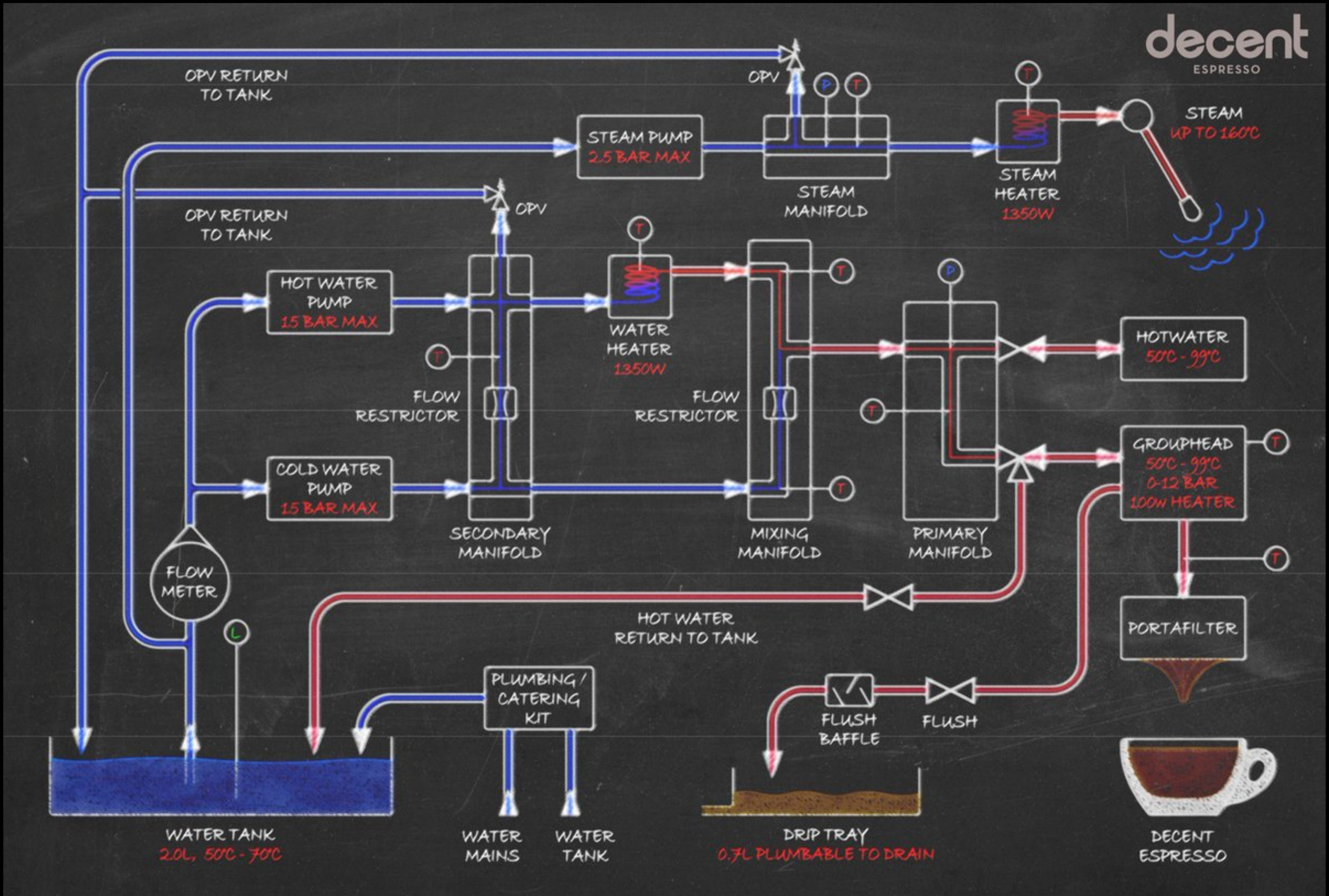
So we made this



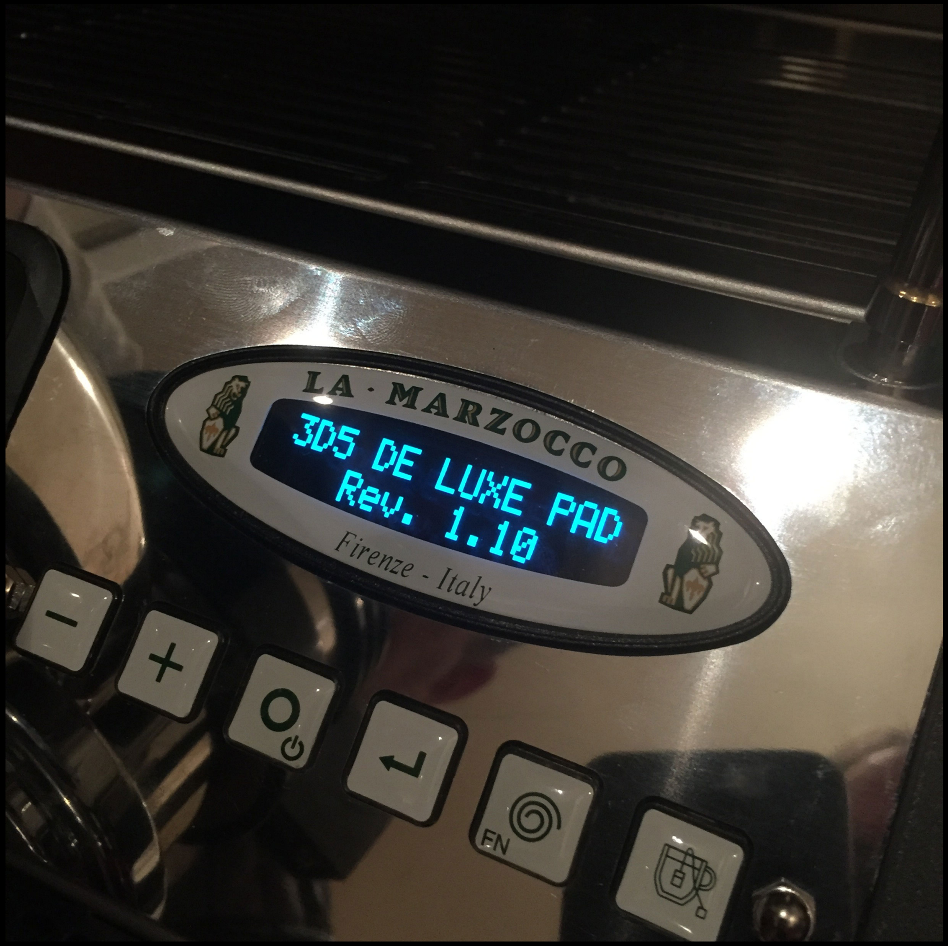
And discovered…

that dynamic control over
water temperature,
pressure and
flow would be very nice.

Which led to this



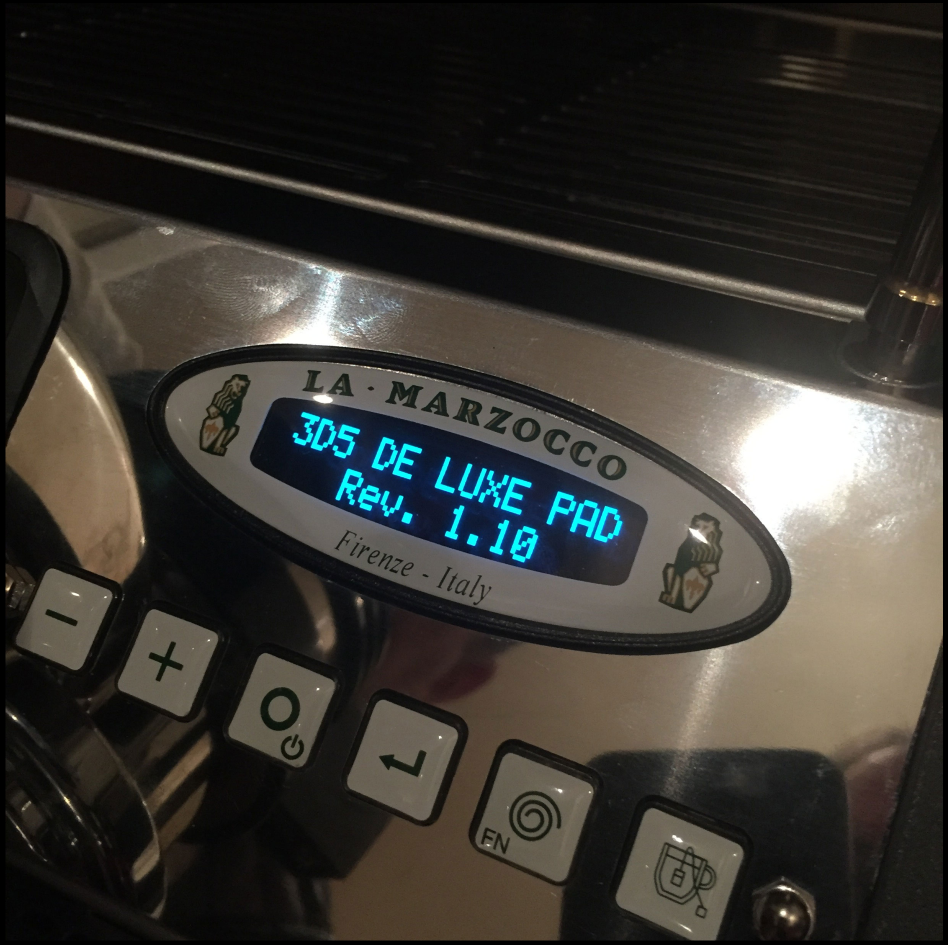
Embedded or ioT?



Limited functionality

limited reliability

Embedded



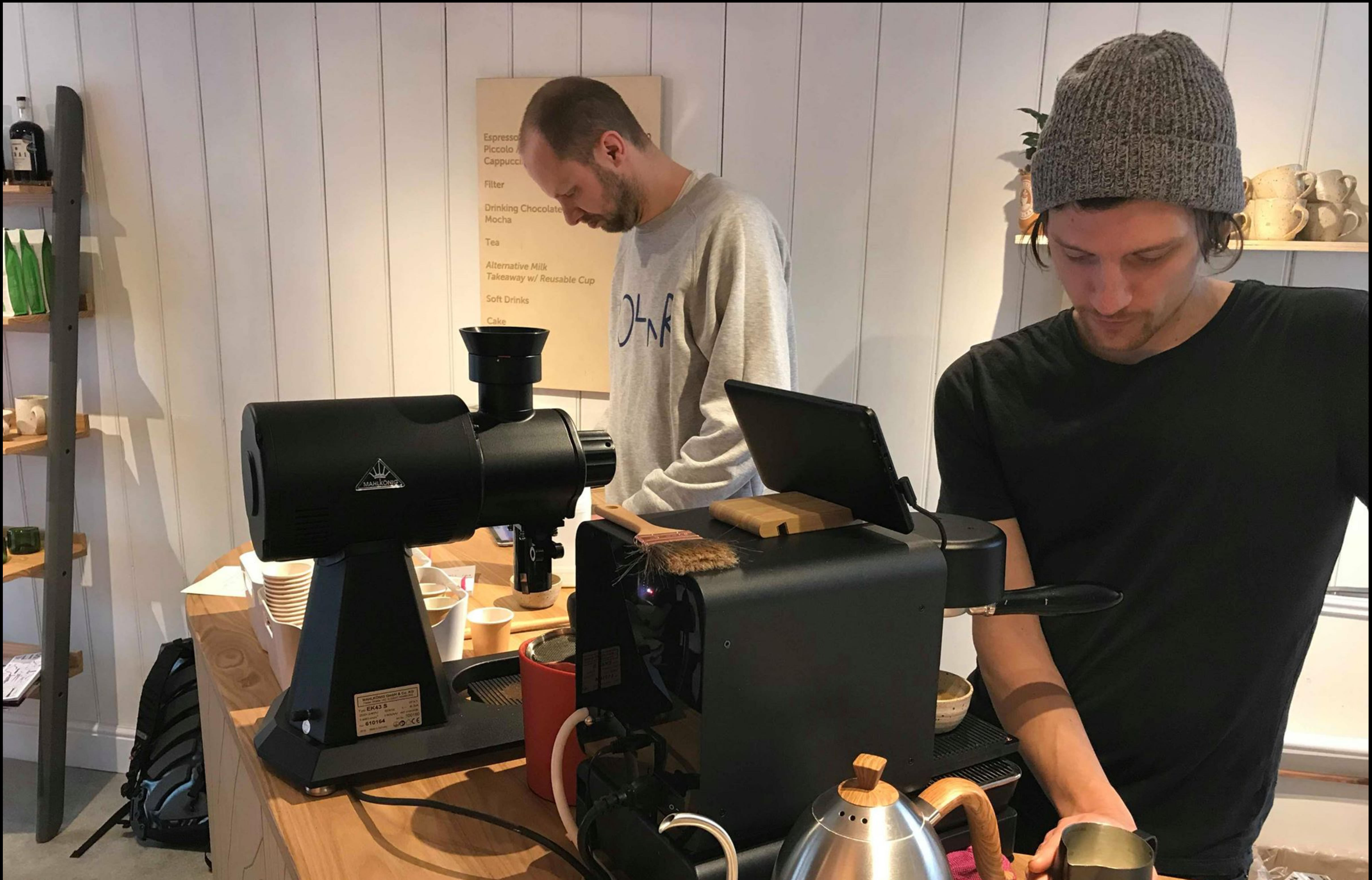
Depreciates with time

ioT

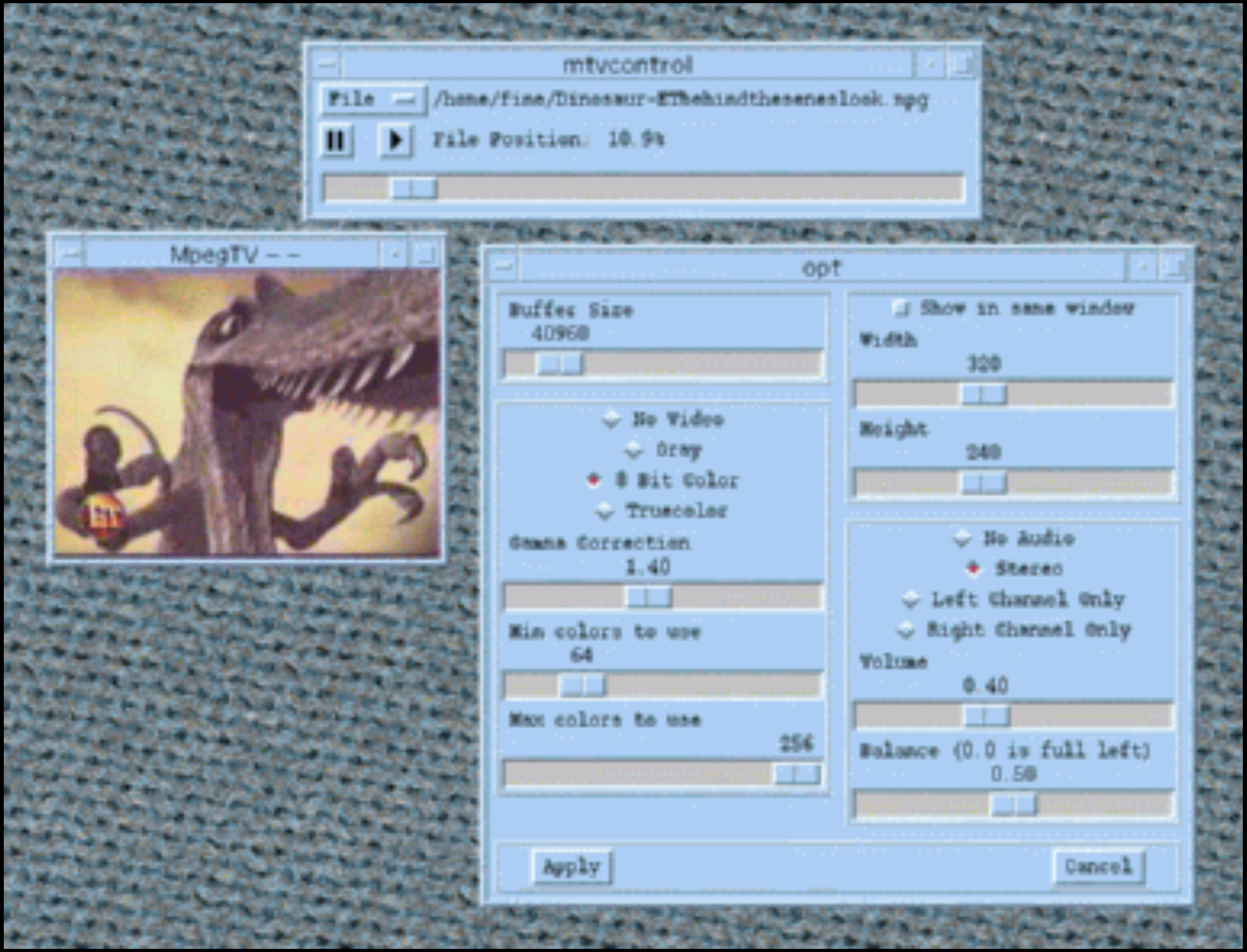
An ***Investment***: in time may become more valuable or zero-value

and include a pre-configured tablet for best of both worlds

Non-integrated tablet for upgradeability



Tk oriented toward windowing UI



mtvcontrol

File /home/fine/Dinosaur-ETbehindthesceneslook.mpg

File Position: 10.9%

MpegTV --

opt

Buffer Size
40960

○ No Video
○ Gray
● 8 Bit Color
○ Truecolor

Gamma Correction
1.40

Min colors to use
64

Max colors to use
256

□ Show in same window

Width
320

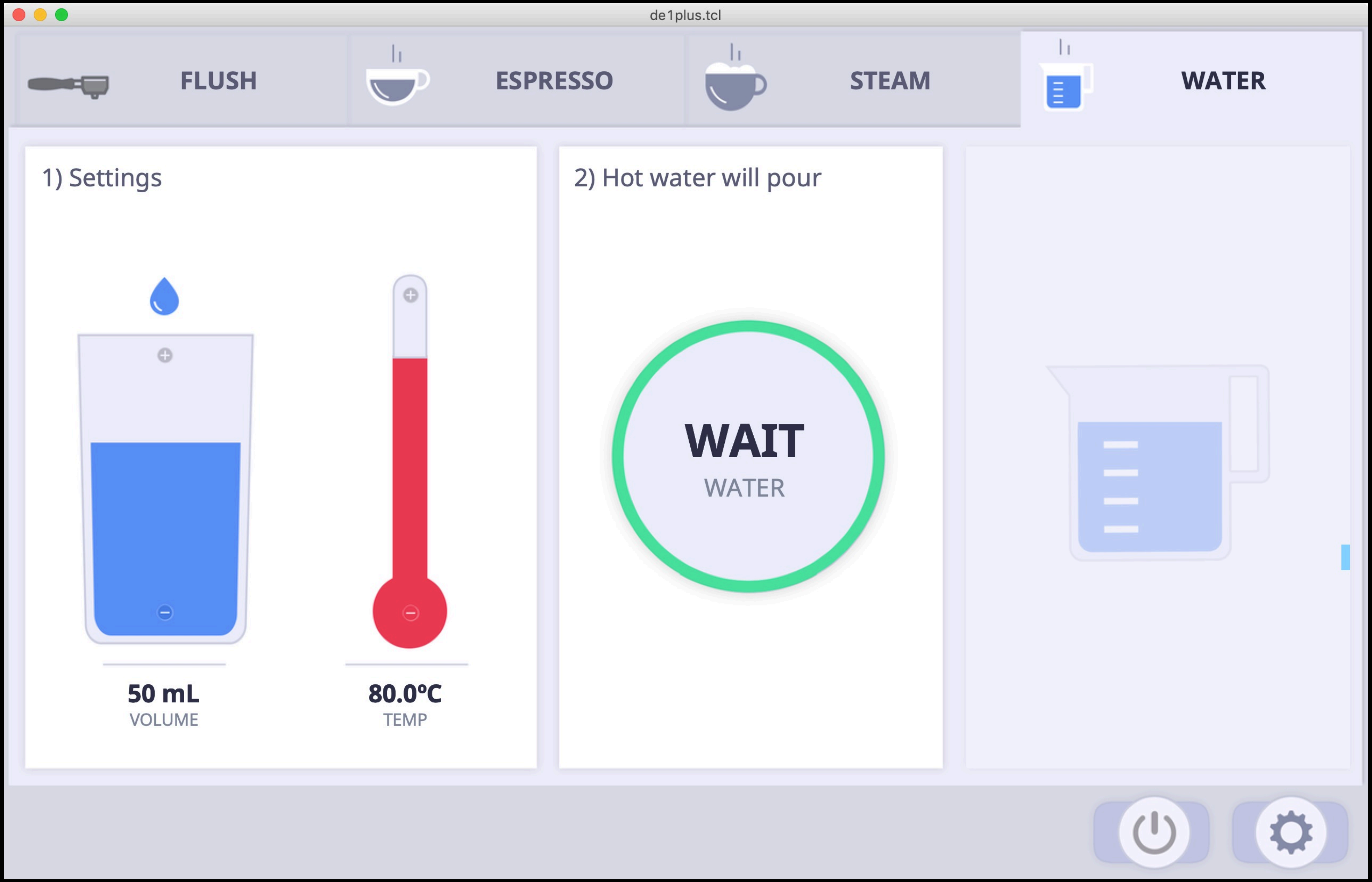
Height
240

○ No Audio
● Stereo
○ Left Channel Only
○ Right Channel Only

Volume
0.40

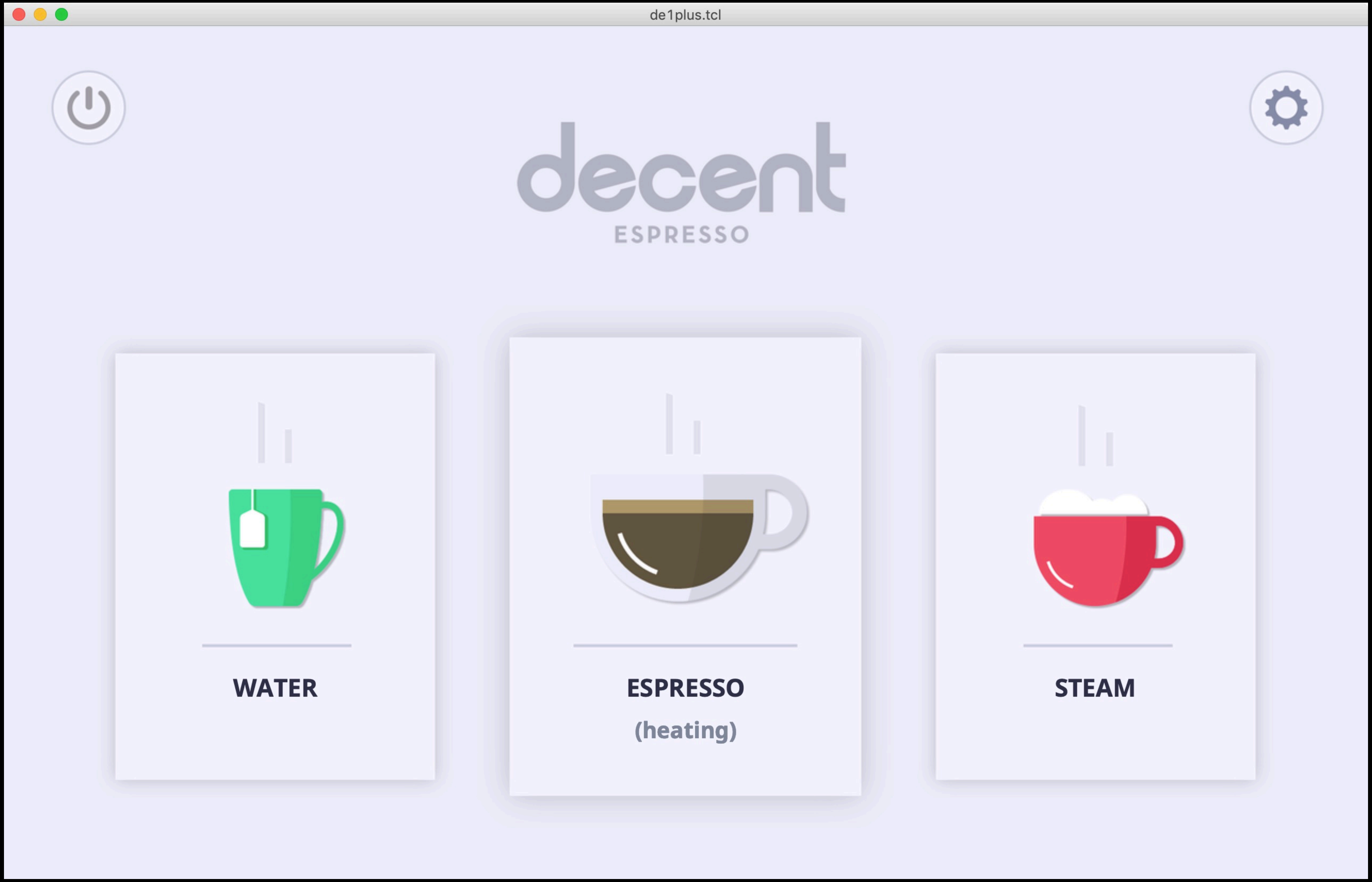
Balance (0.0 is full left)
0.50

I made my own full-screen UI manager

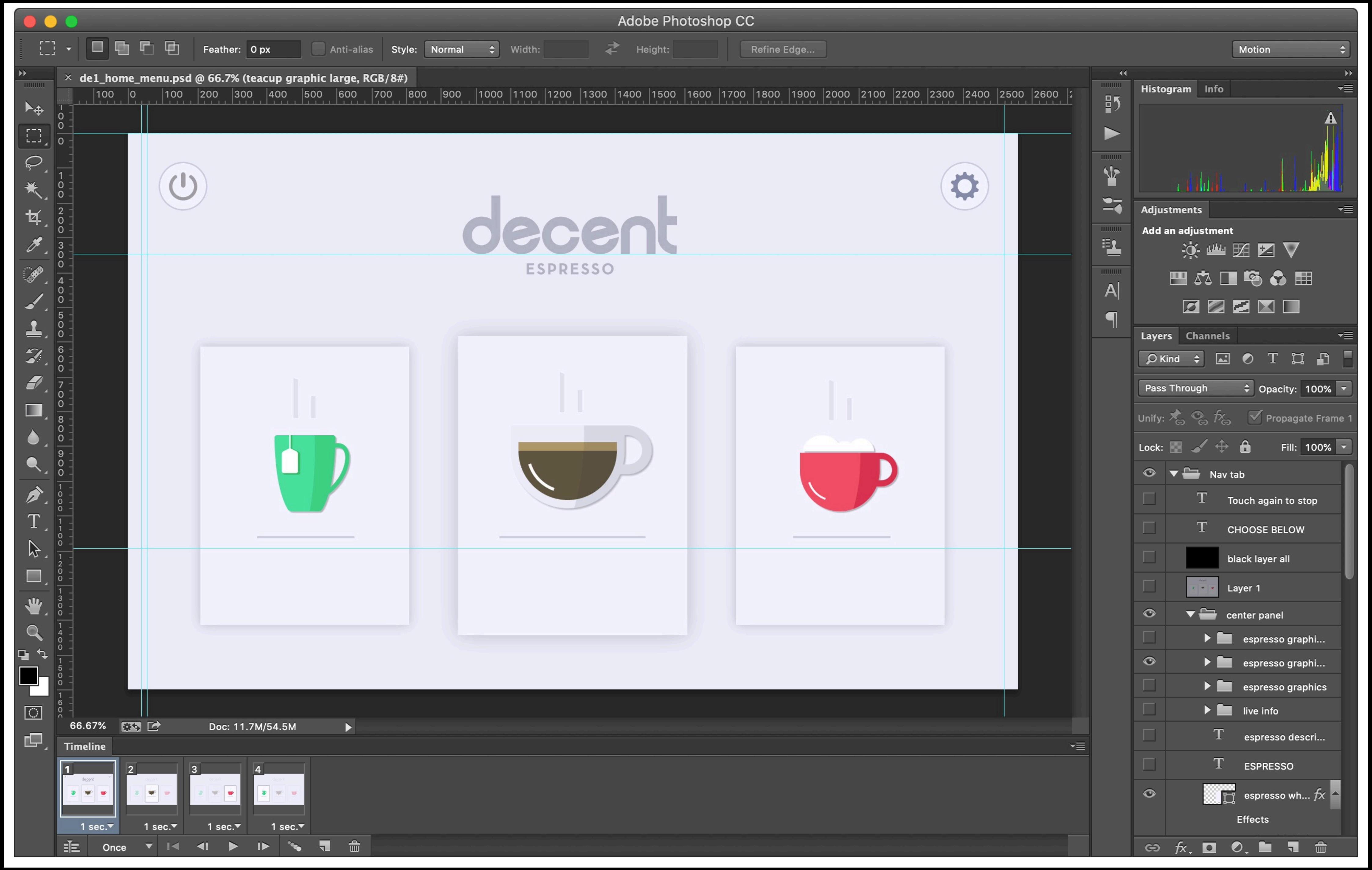


To manage the complexity of what to show/hide and to use image caching for speed.

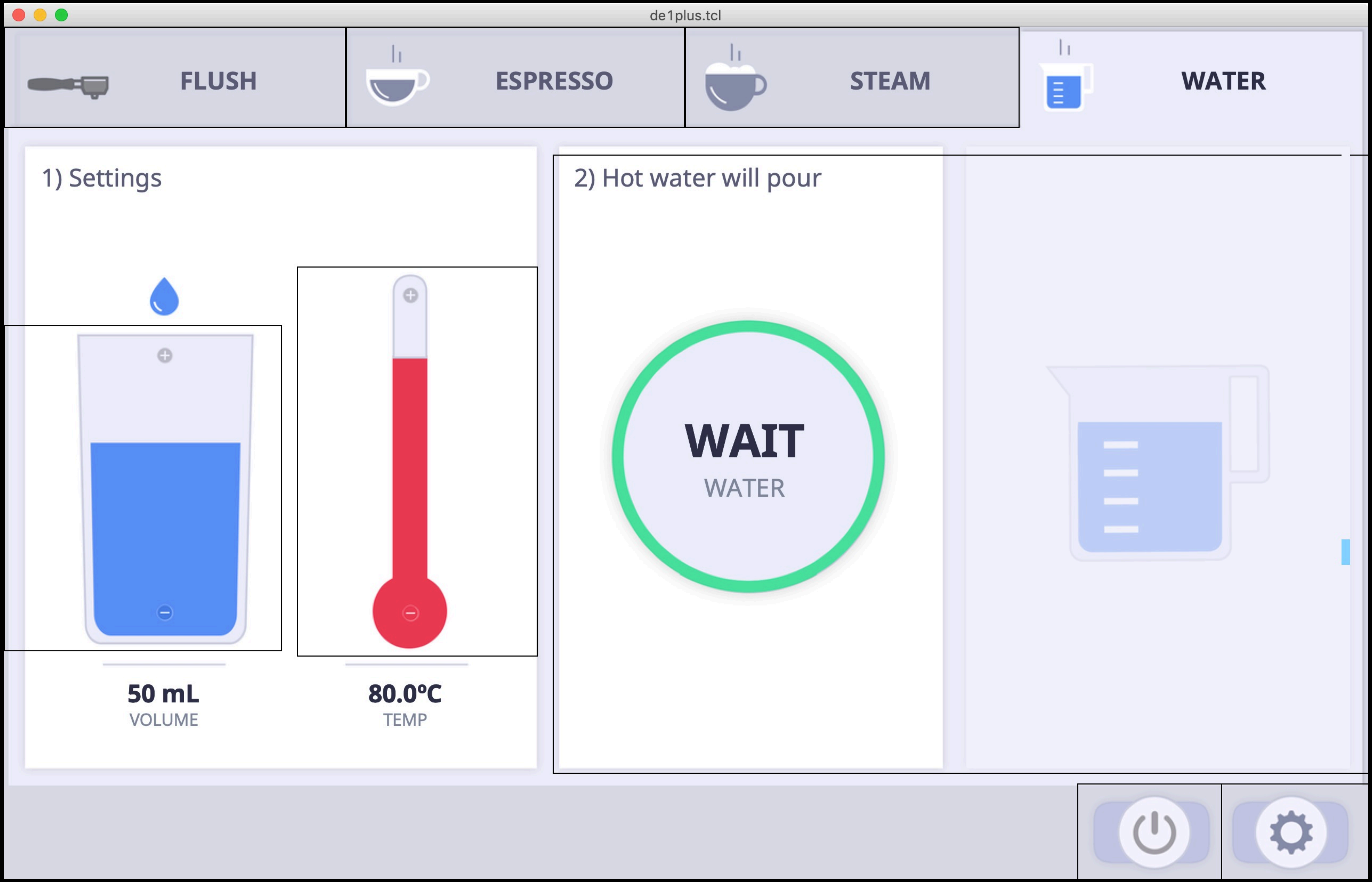
Skins are just PNGs



Created as movies in Photoshop

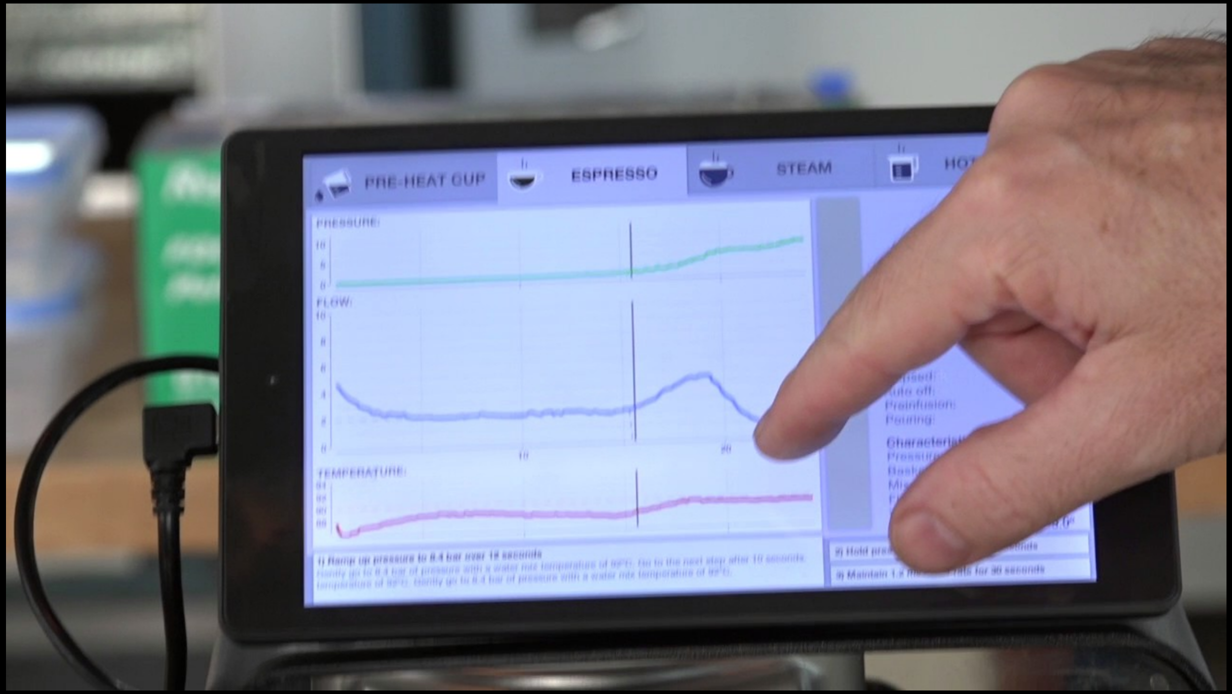


Using “tap zones” and some homemade graphical widgets



There's never been an espresso UI, so I try many ideas

There were no models to follow, and people could not express what they wanted



A “skin” definition language based on Tcl

```
add_de1_page "espresso" "espresso_2.png"

add_de1_page “espresso_zoomed
 espresso_zoomed_temperature”
 "espresso_2_zoomed.png"
```

The above code defines new pages, and what background image is auto-displayed

Text and Variables

```
# settings for preheating a cup

add_de1_variable "preheat_1" 1390 775 -text [translate
"START"] -font $green_button_font -fill "#2d3046" -anchor
"center" -textvariable {[start_text_if_espresso_ready]}

add_de1_text "preheat_1 preheat_2 preheat_3 preheat_4" 1390
865 -text [translate "FLUSH"] -font Helv_10 -fill "#7f879a" -
anchor "center"

add_de1_variable "preheat_2" 1390 775 -text [translate "STOP"]
-font $green_button_font -fill "#2d3046" -anchor "center"  -
textvariable {[stop_text_if_espresso_stoppable]}

add_de1_variable "preheat_3 preheat_4" 1390 775 -text
[translate "RESTART"] -font $green_button_font -fill "#2d3046"
-anchor "center" -textvariable
{[restart_text_if_espresso_ready]}
```

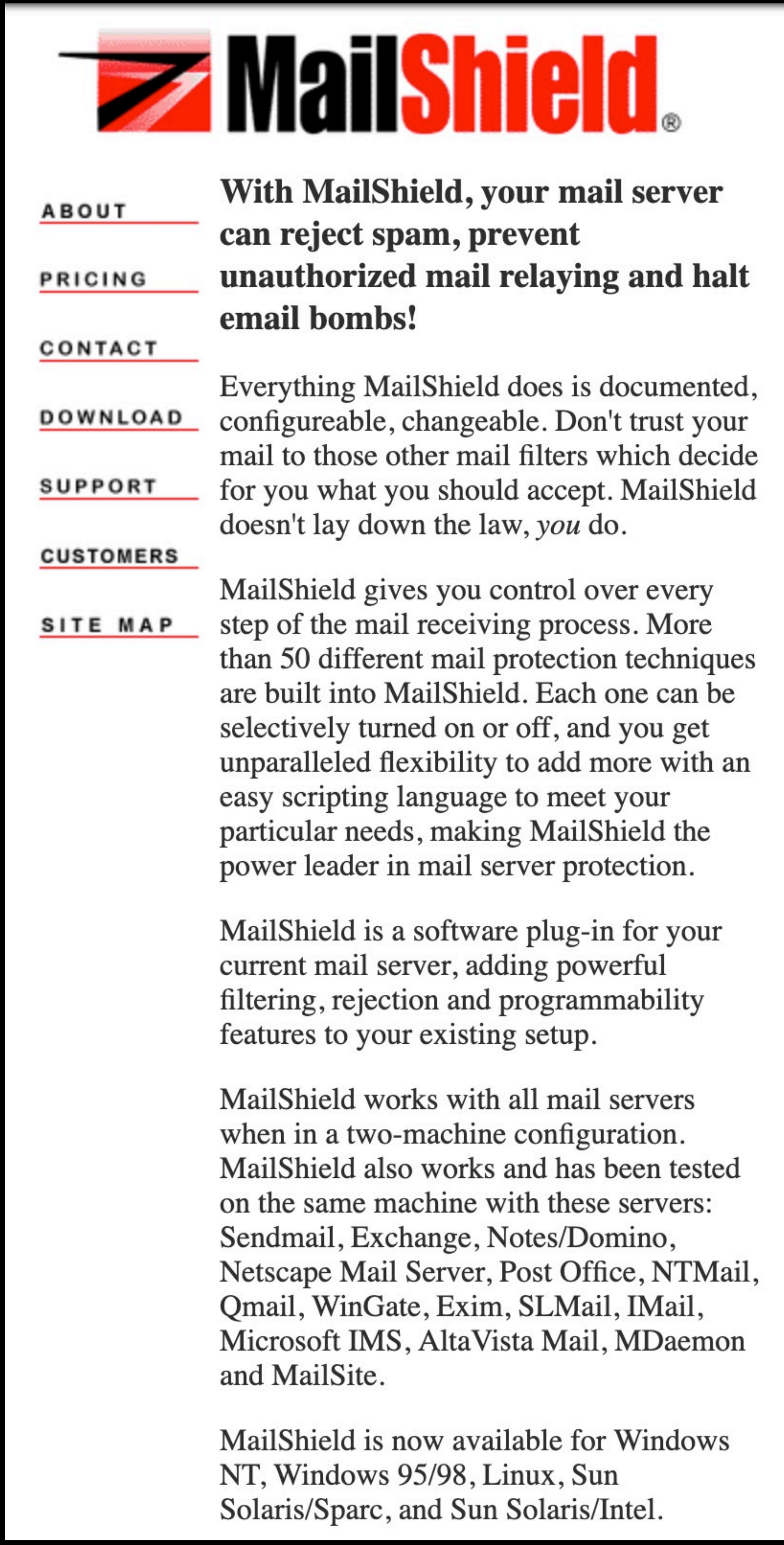
Buttons are “tap zones” auto-enabled in certain contexts

```
add_de1_button "preheat_1 preheat_3
preheat_4" {say [translate {pre-heat cup}]
$::settings(sound_button_in);
set ::settings(preheat_temperature) 90;
set_next_page hotwaterrinse preheat_2;
start_hot_water_rinse} 0 240 2560 1400

add_de1_button "preheat_2" {say [translate
{stop}] $::settings(sound_button_in);
set_next_page off preheat_4; start_idle} 0
240 2560 1600
```

Years ago, I’d made a simple rule language for my anti-spam.

It used a (simple for me to parse) subset of Perl.

The simple rule language was the most popular feature.



With MailShield, your mail server can reject spam, prevent unauthorized mail relaying and halt email bombs!

Everything MailShield does is documented, configureable, changeable. Don't trust your mail to those other mail filters which decide for you what you should accept. MailShield doesn't lay down the law, *you* do.

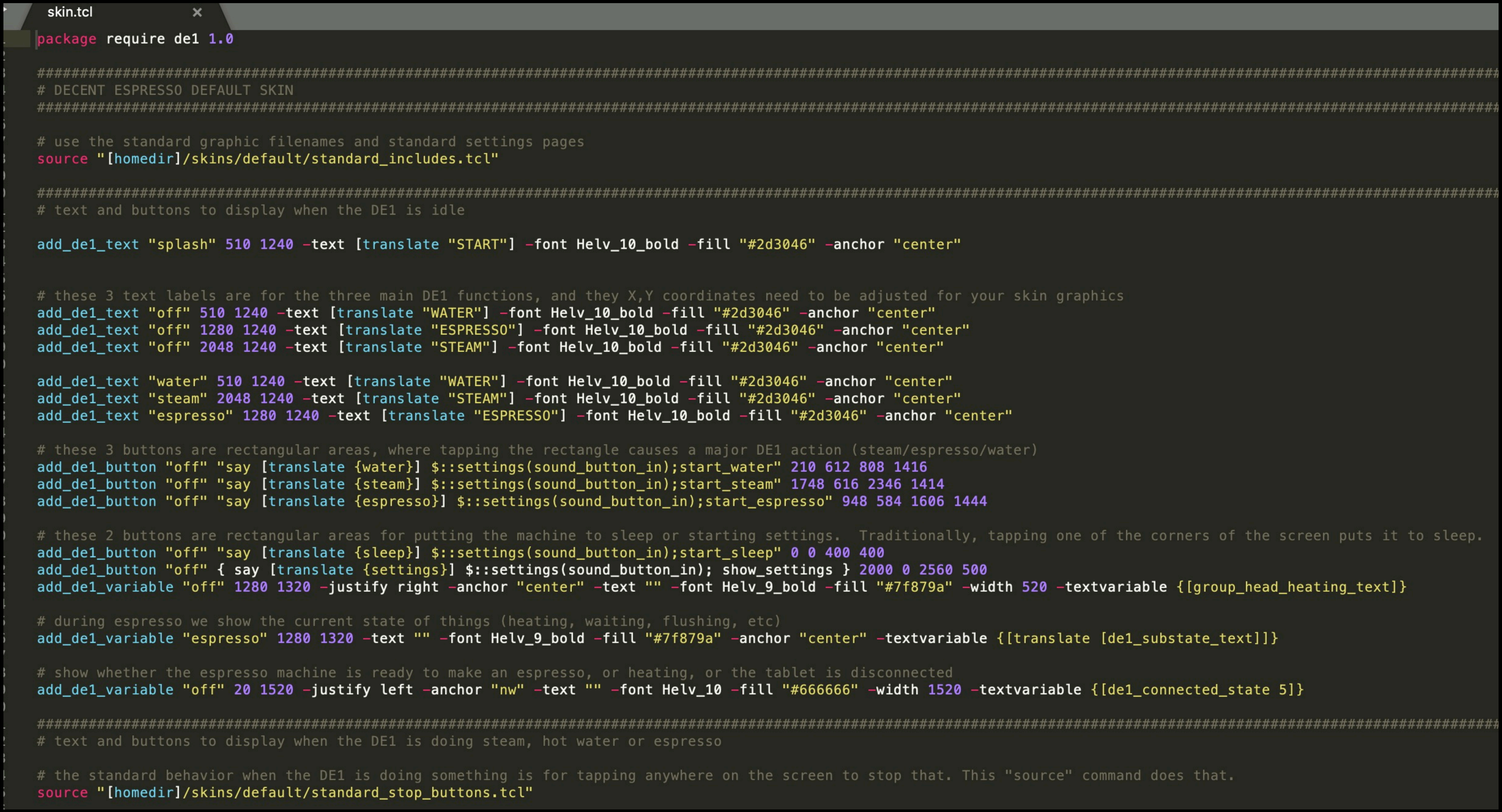
MailShield gives you control over every step of the mail receiving process. More than 50 different mail protection techniques are built into MailShield. Each one can be selectively turned on or off, and you get unparalleled flexibility to add more with an easy scripting language to meet your particular needs, making MailShield the power leader in mail server protection.

MailShield is a software plug-in for your current mail server, adding powerful filtering, rejection and programmability features to your existing setup.

MailShield works with all mail servers when in a two-machine configuration. MailShield also works and has been tested on the same machine with these servers: Sendmail, Exchange, Notes/Domino, Netscape Mail Server, Post Office, NTMail, Qmail, WinGate, Exim, SLMail, IMail, Microsoft IMS, AltaVista Mail, MDaemon and MailSite.

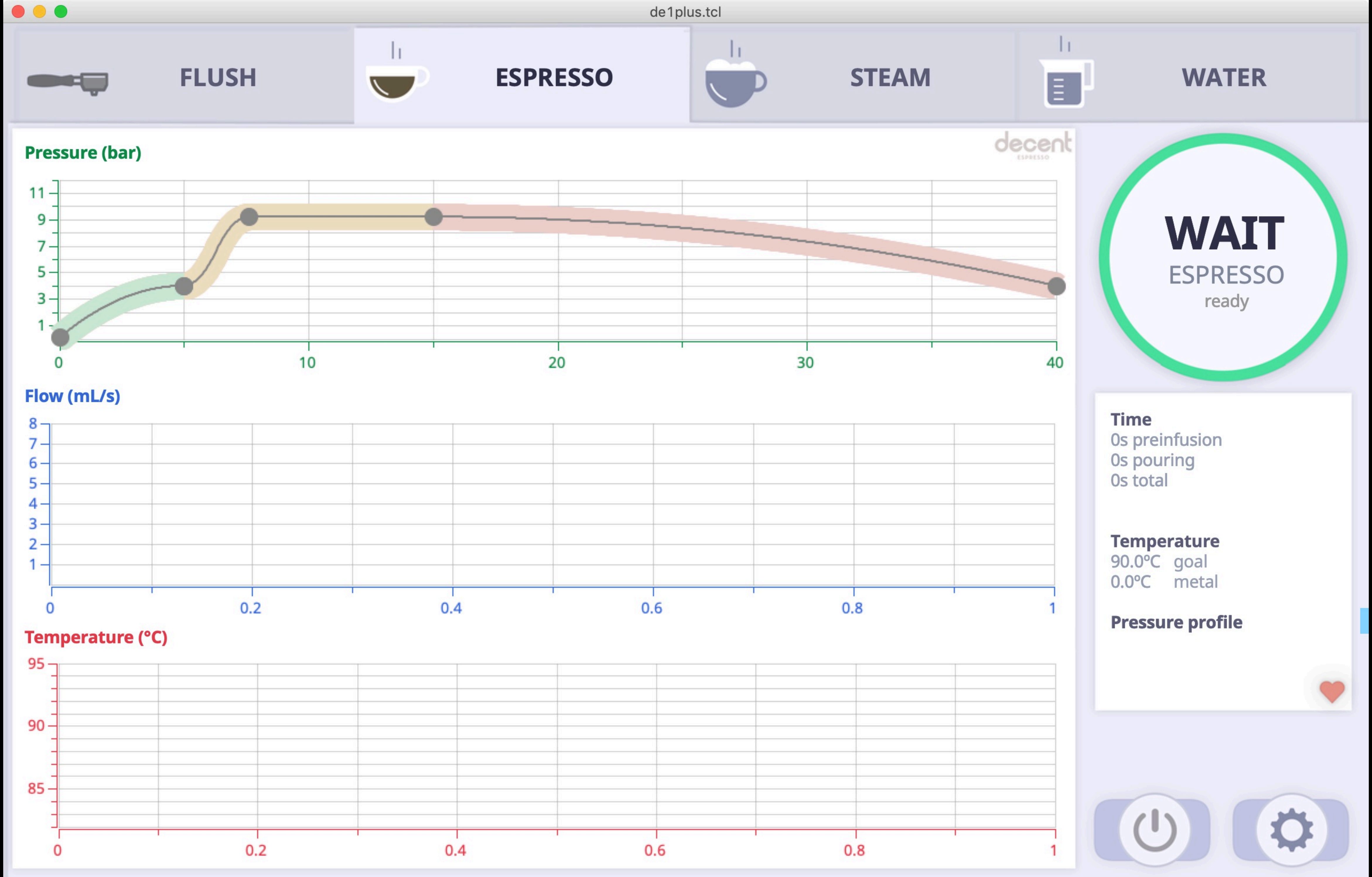
MailShield is now available for Windows NT, Windows 95/98, Linux, Sun Solaris/Sparc, and Sun Solaris/Intel.

Kept as simple as possible



```
package require de1 1.0

##########################################################################################
# DECENT ESPRESSO DEFAULT SKIN
##########################################################################################

# use the standard graphic filenames and standard settings pages
source "[homedir]/skins/default/standard_includes.tcl"

##########################################################################################
# text and buttons to display when the DE1 is idle

add_de1_text "splash" 510 1240 -text [translate "START"] -font Helv_10_bold -fill "#2d3046" -anchor "center"


# these 3 text labels are for the three main DE1 functions, and they X,Y coordinates need to be adjusted for your skin graphics
add_de1_text "off" 510 1240 -text [translate "WATER"] -font Helv_10_bold -fill "#2d3046" -anchor "center"
add_de1_text "off" 1280 1240 -text [translate "ESPRESSO"] -font Helv_10_bold -fill "#2d3046" -anchor "center"
add_de1_text "off" 2048 1240 -text [translate "STEAM"] -font Helv_10_bold -fill "#2d3046" -anchor "center"

add_de1_text "water" 510 1240 -text [translate "WATER"] -font Helv_10_bold -fill "#2d3046" -anchor "center"
add_de1_text "steam" 2048 1240 -text [translate "STEAM"] -font Helv_10_bold -fill "#2d3046" -anchor "center"
add_de1_text "espresso" 1280 1240 -text [translate "ESPRESSO"] -font Helv_10_bold -fill "#2d3046" -anchor "center"

# these 3 buttons are rectangular areas, where tapping the rectangle causes a major DE1 action (steam/espresso/water)
add_de1_button "off" "say [translate {water}] $::settings(sound_button_in);start_water" 210 612 808 1416
add_de1_button "off" "say [translate {steam}] $::settings(sound_button_in);start_steam" 1748 616 2346 1414
add_de1_button "off" "say [translate {espresso}] $::settings(sound_button_in);start_espresso" 948 584 1606 1444

# these 2 buttons are rectangular areas for putting the machine to sleep or starting settings.  Traditionally, tapping one of the corners of the screen puts it to sleep.
add_de1_button "off" "say [translate {sleep}] $::settings(sound_button_in);start_sleep" 0 0 400 400
add_de1_button "off" { say [translate {settings}] $::settings(sound_button_in); show_settings } 2000 0 2560 500
add_de1_variable "off" 1280 1320 -justify right -anchor "center" -text "" -font Helv_9_bold -fill "#7f879a" -width 520 -textvariable {[group_head_heating_text]}

# during espresso we show the current state of things (heating, waiting, flushing, etc)
add_de1_variable "espresso" 1280 1320 -text "" -font Helv_9_bold -fill "#7f879a" -anchor "center" -textvariable {[translate [de1_substate_text]]}

# show whether the espresso machine is ready to make an espresso, or heating, or the tablet is disconnected
add_de1_variable "off" 20 1520 -justify left -anchor "nw" -text "" -font Helv_10 -fill "#666666" -width 1520 -textvariable {[de1_connected_state 5]}

##########################################################################################
# text and buttons to display when the DE1 is doing steam, hot water or espresso

# the standard behavior when the DE1 is doing something is for tapping anywhere on the screen to stop that. This "source" command does that.
source "[homedir]/skins/default/standard_stop_buttons.tcl"
```

Charts use “blt” for speed



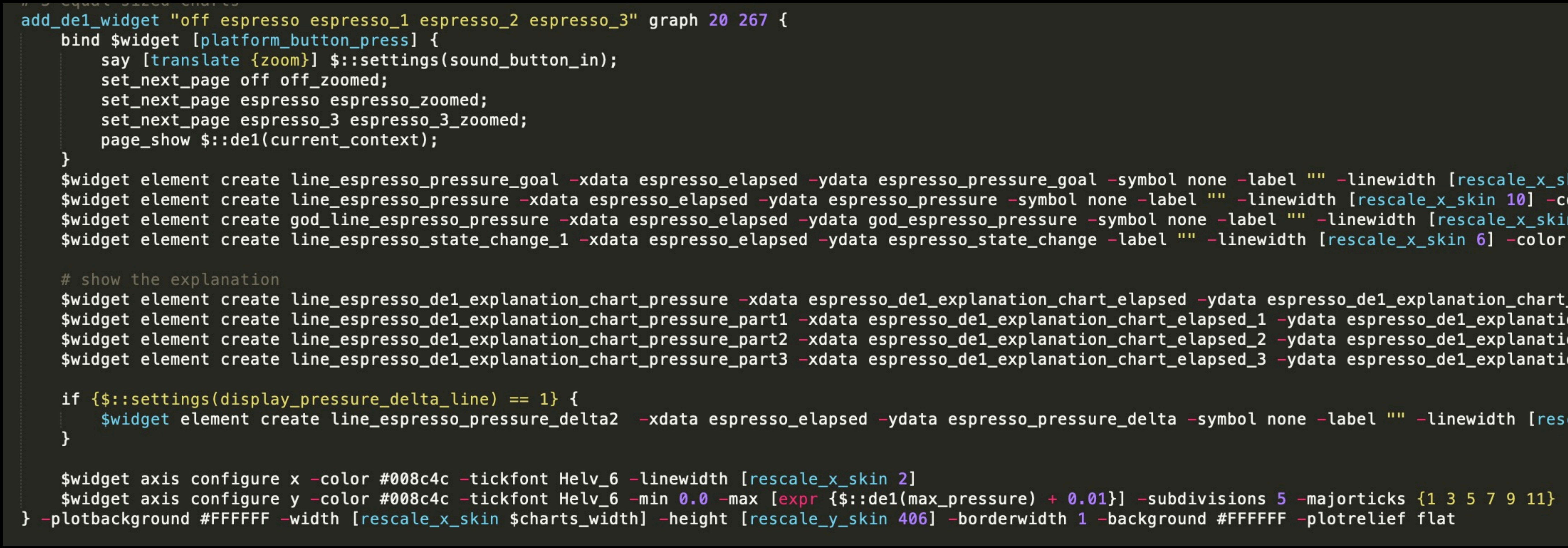
WAIT
ESPRESSO
ready

Time
0s preinfusion
0s pouring
0s total

Temperature
90.0ºC goal
0.0ºC metal

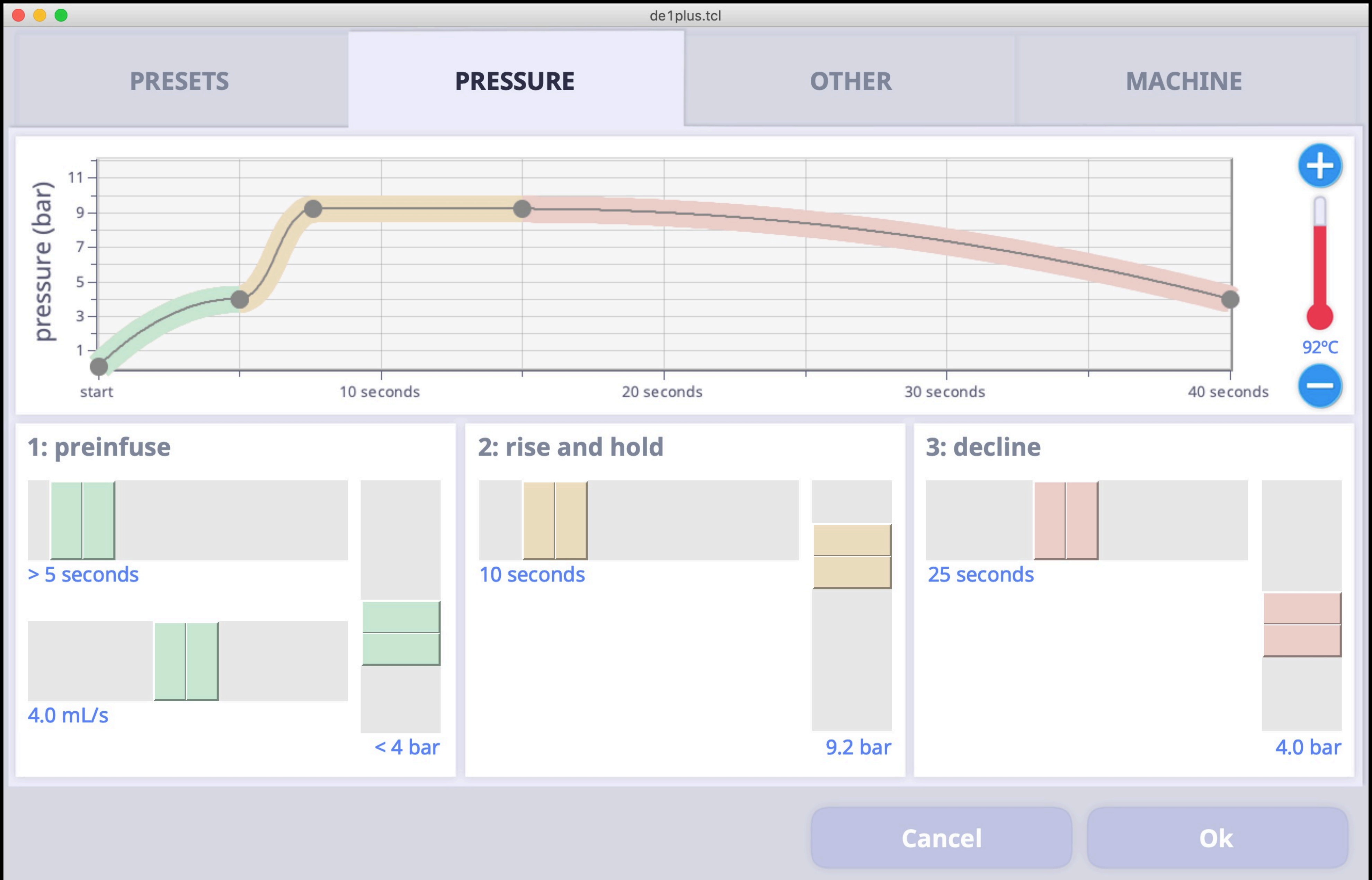
Pressure profile

Charting code gets fairly complicated



```
# 3 equal sized charts
add_de1_widget "off espresso espresso_1 espresso_2 espresso_3" graph 20 267 {
    bind $widget [platform_button_press] {
        say [translate {zoom}] $::settings(sound_button_in);
        set_next_page off off_zoomed;
        set_next_page espresso espresso_zoomed;
        set_next_page espresso_3 espresso_3_zoomed;
        page_show $::de1(current_context);
    }
    $widget element create line_espresso_pressure_goal -xdata espresso_elapsed -ydata espresso_pressure_goal -symbol none -label "" -linewidth [rescale_x_s
    $widget element create line_espresso_pressure -xdata espresso_elapsed -ydata espresso_pressure -symbol none -label "" -linewidth [rescale_x_skin 10] -c
    $widget element create god_line_espresso_pressure -xdata espresso_elapsed -ydata god_espresso_pressure -symbol none -label "" -linewidth [rescale_x_ski
    $widget element create line_espresso_state_change_1 -xdata espresso_elapsed -ydata espresso_state_change -label "" -linewidth [rescale_x_skin 6] -color

    # show the explanation
    $widget element create line_espresso_de1_explanation_chart_pressure -xdata espresso_de1_explanation_chart_elapsed -ydata espresso_de1_explanation_chart_
    $widget element create line_espresso_de1_explanation_chart_pressure_part1 -xdata espresso_de1_explanation_chart_elapsed_1 -ydata espresso_de1_explanati
    $widget element create line_espresso_de1_explanation_chart_pressure_part2 -xdata espresso_de1_explanation_chart_elapsed_2 -ydata espresso_de1_explanati
    $widget element create line_espresso_de1_explanation_chart_pressure_part3 -xdata espresso_de1_explanation_chart_elapsed_3 -ydata espresso_de1_explanati

    if {$::settings(display_pressure_delta_line) == 1} {
        $widget element create line_espresso_pressure_delta2  -xdata espresso_elapsed -ydata espresso_pressure_delta -symbol none -label "" -linewidth [res
    }

    $widget axis configure x -color #008c4c -tickfont Helv_6 -linewidth [rescale_x_skin 2]
    $widget axis configure y -color #008c4c -tickfont Helv_6 -min 0.0 -max [expr {$::de1(max_pressure) + 0.01}] -subdivisions 5 -majorticks {1 3 5 7 9 11}
} -plotbackground #FFFFFF -width [rescale_x_skin $charts_width] -height [rescale_y_skin 406] -borderwidth 1 -background #FFFFFF -plotrelief flat
```

Using a mix of Tk Widgets and “fake” widgets



1: preinfuse

> 5 seconds

4.0 mL/s

< 4 bar

2: rise and hold

10 seconds

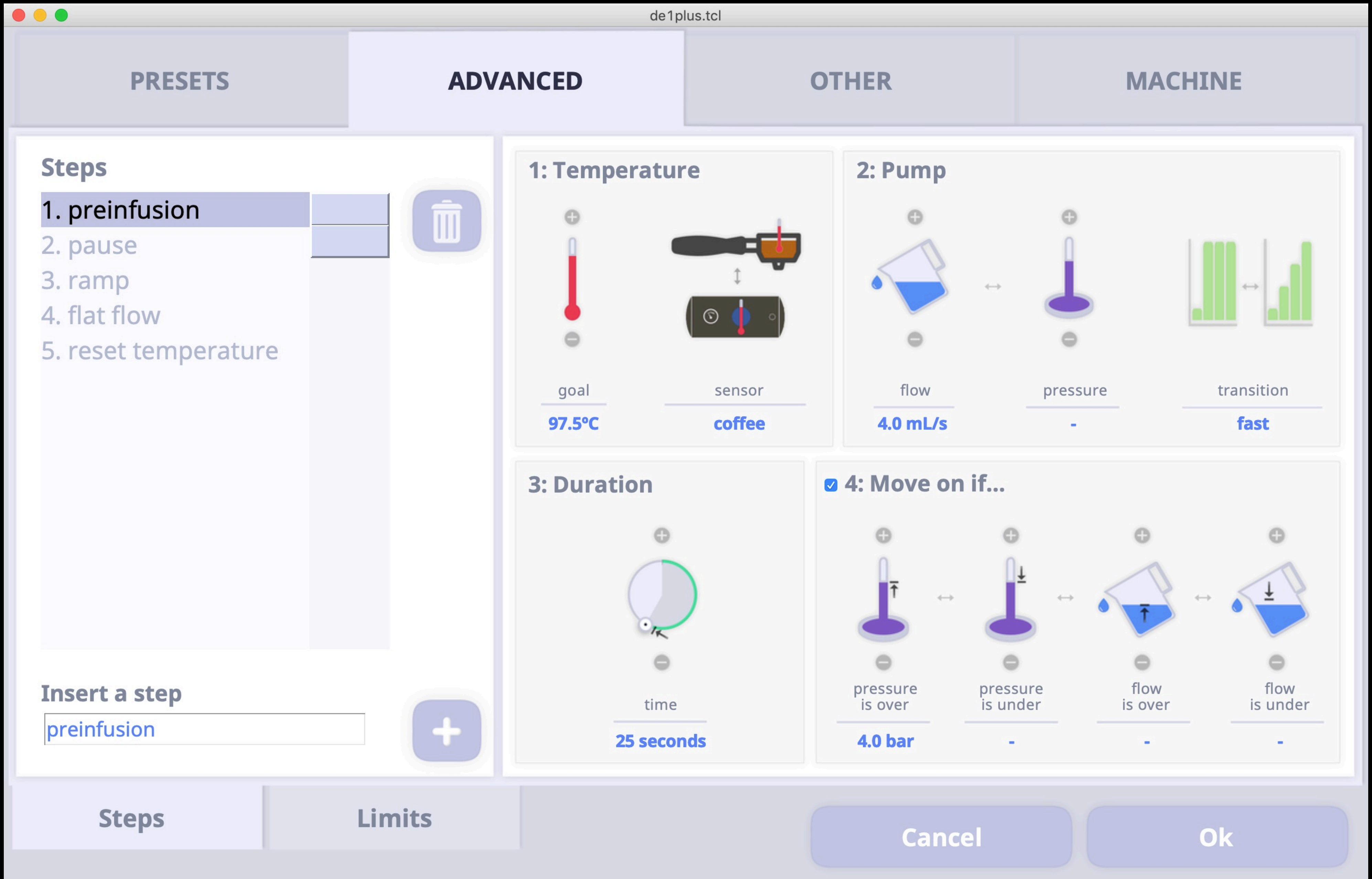
9.2 bar

3: decline

25 seconds

4.0 bar

High density tablet UI design is very challenging



de1plus.tcl

Steps

1. preinfusion
2. pause
3. ramp
4. flat flow
5. reset temperature

Insert a step

preinfusion

1: Temperature

goal: 97.5°C

sensor: coffee

2: Pump

flow: 4.0 mL/s

pressure: -

transition: fast

3: Duration

time: 25 seconds

☑ 4: Move on if...

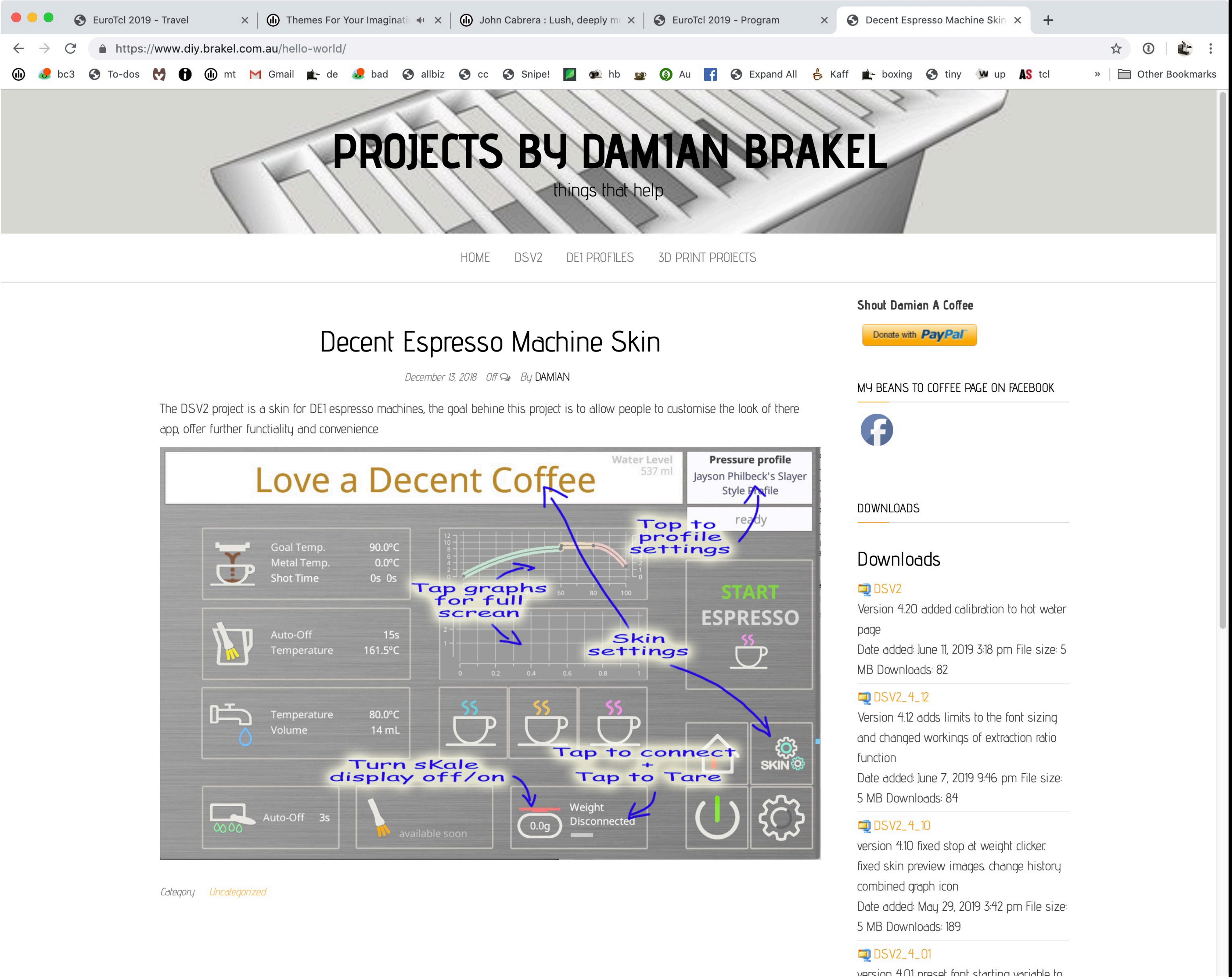
pressure is over: 4.0 bar

pressure is under: -

flow is over: -

flow is under: -

Users make their own skins



PROJECTS BY DAMIAN BRAKEL

things that help

HOME DSV2 DE1 PROFILES 3D PRINT PROJECTS

Decent Espresso Machine Skin

December 13, 2018 *Off* *By* DAMIAN

The DSV2 project is a skin for DE1 espresso machines, the goal behine this project is to allow people to customise the look of there app, offer further functiality and convenience

Category *Uncategorized*

Shout Damian A Coffee

Donate with PayPal

MY BEANS TO COFFEE PAGE ON FACEBOOK

DOWNLOADS

Downloads

DSV2

Version 4.20 added calibration to hot water page

Date added: June 11, 2019 3:18 pm File size: 5 MB Downloads: 82

DSV2_4_12

Version 4.12 adds limits to the font sizing and changed workings of extraction ratio function

Date added: June 7, 2019 9:46 pm File size: 5 MB Downloads: 84

DSV2_4_10

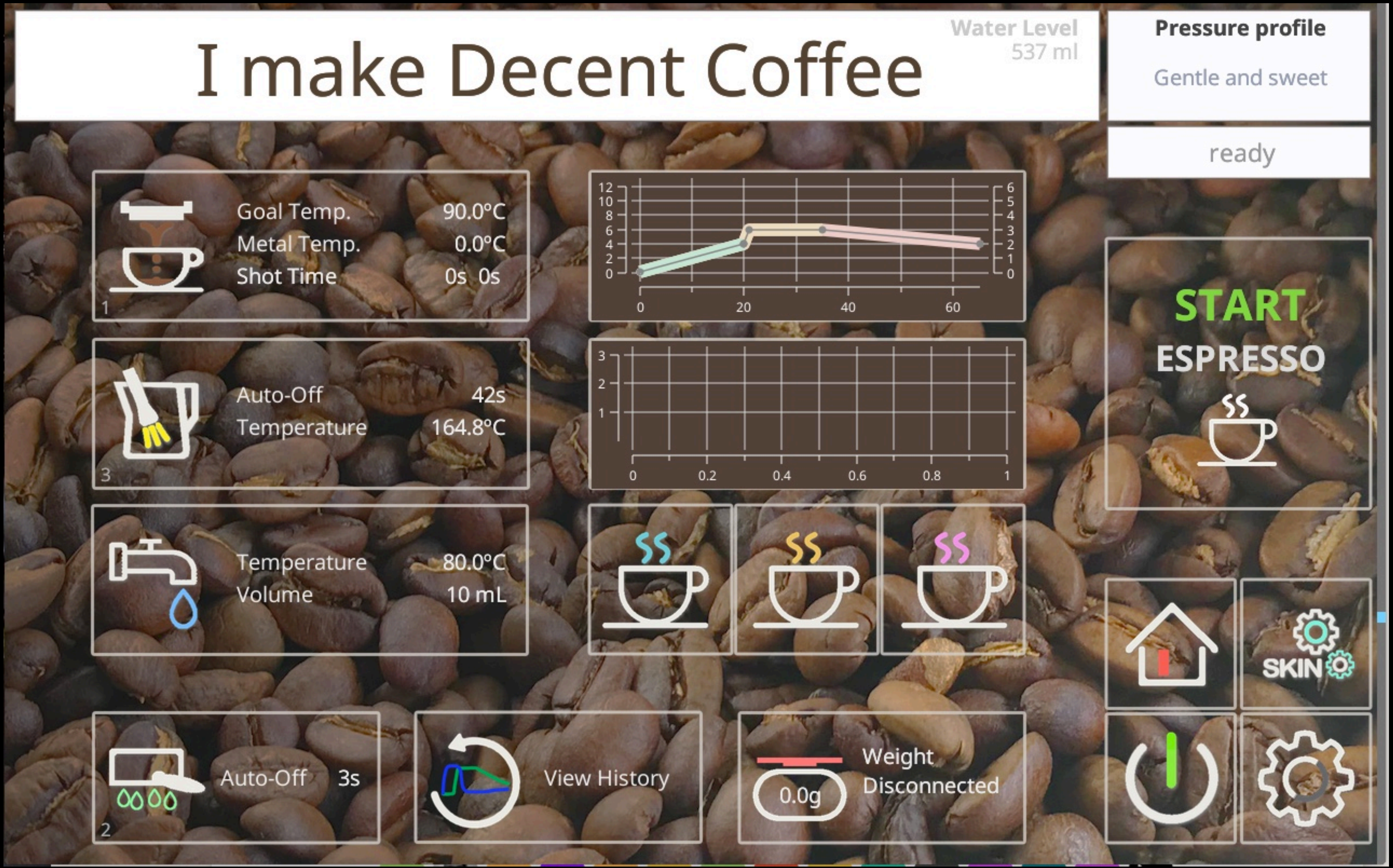
version 4.10 fixed stop at weight clicker. fixed skin preview images. change history combined graph icon

Date added: May 29, 2019 3:42 pm File size: 5 MB Downloads: 189

DSV2_4_01

version 4.01 preset font starting variable to

With different UI approaches
(this one is single-screen)



I make Decent Coffee

Water Level 537 ml

Pressure profile

Gentle and sweet

ready

Goal Temp. 90.0°C
Metal Temp. 0.0°C
Shot Time 0s 0s

Auto-Off 42s
Temperature 164.8°C

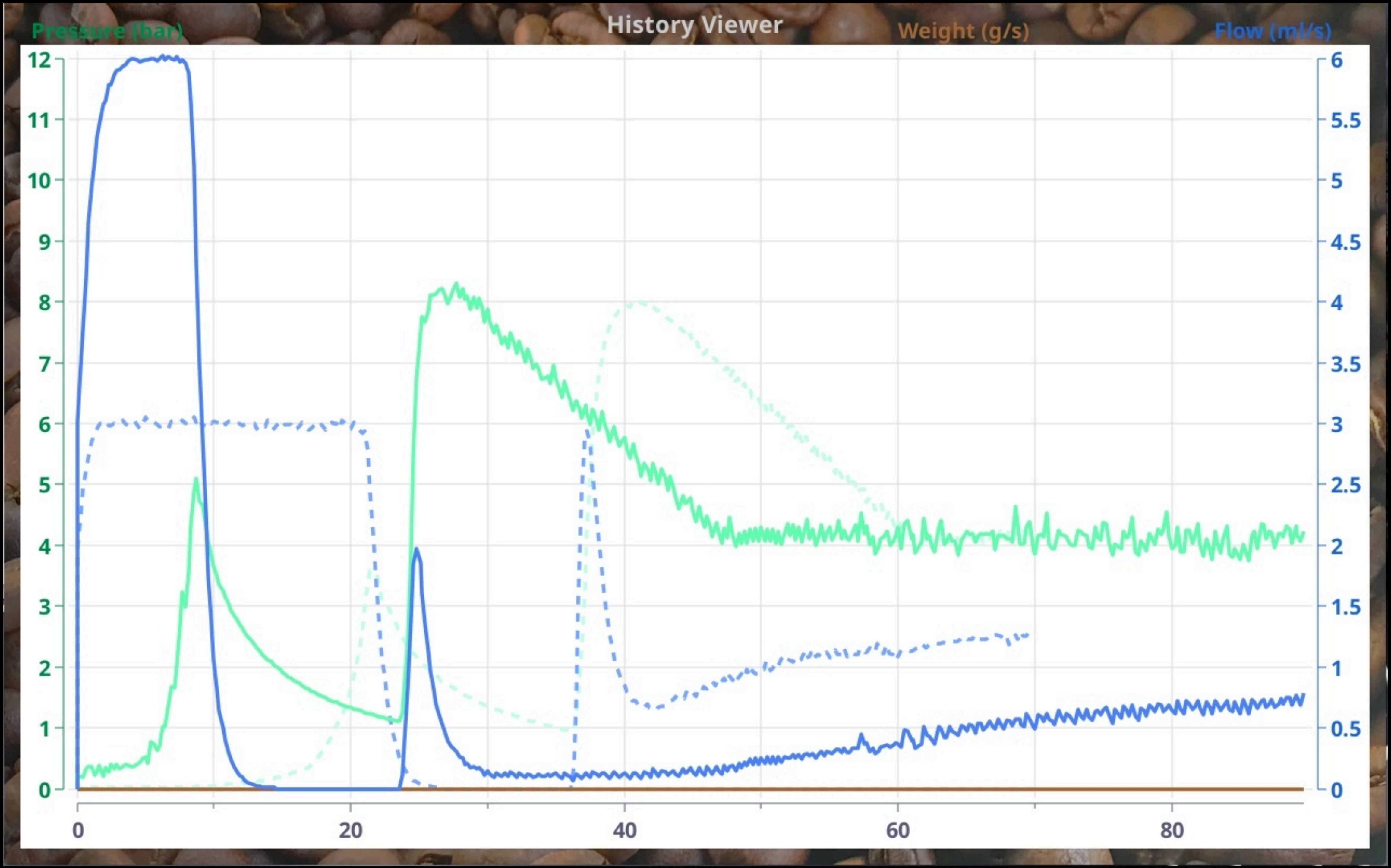
Temperature 80.0°C
Volume 10 mL

Auto-Off 3s

Weight Disconnected

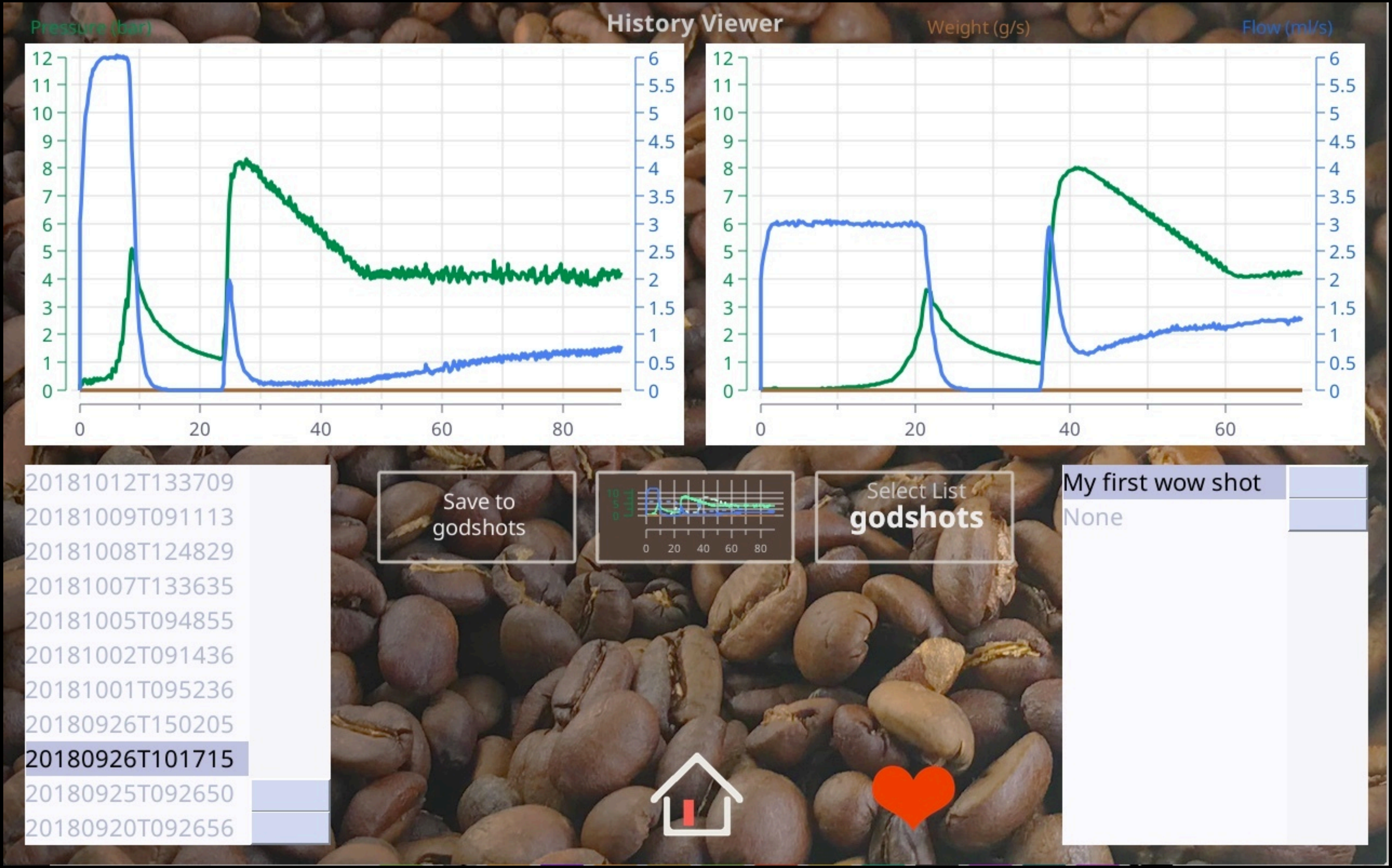
0.0g

Trying to get different insights



Solving different problems

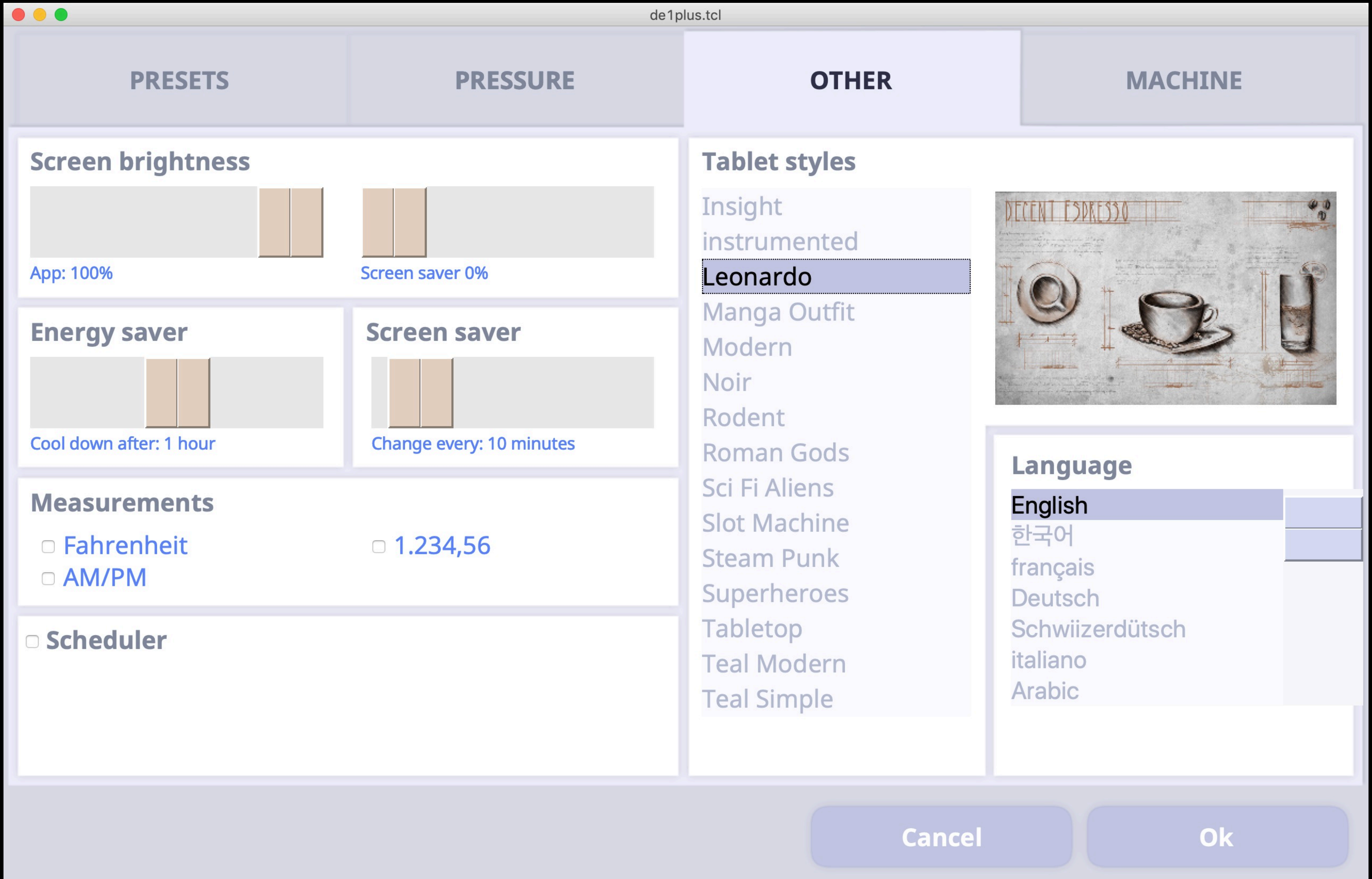
(here: comparing historical espressos)



20181012T133709
20181009T091113
20181008T124829
20181007T133635
20181005T094855
20181002T091436
20181001T095236
20180926T150205
20180926T101715
20180925T092650
20180920T092656

My first wow shot
None

Leading to many UI choices



Screen brightness

App: 100%

Screen saver 0%

Energy saver

Cool down after: 1 hour

Screen saver

Change every: 10 minutes

Measurements

□ Fahrenheit

□ AM/PM

□ 1.234,56

□ **Scheduler**

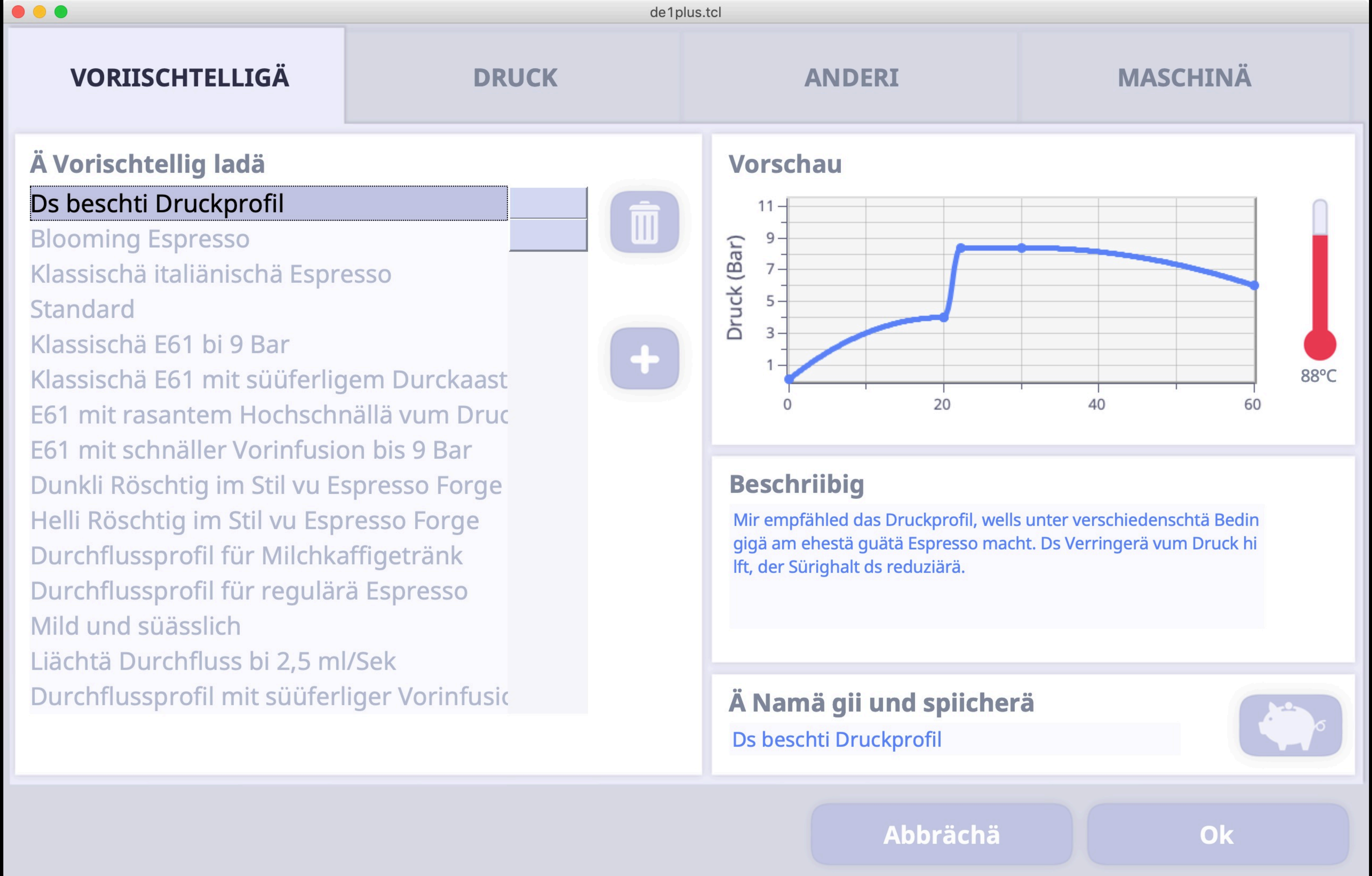
Tablet styles

- Insight
- instrumented
- Leonardo
- Manga Outfit
- Modern
- Noir
- Rodent
- Roman Gods
- Sci Fi Aliens
- Slot Machine
- Steam Punk
- Superheroes
- Tabletop
- Teal Modern
- Teal Simple

Language

- English
- 한국어
- français
- Deutsch
- Schwiizerdütsch
- italiano
- Arabic

And many translations



Ä Vorischtellig ladä

- Ds beschti Druckprofil
- Blooming Espresso
- Klassischä italiänischä Espresso
- Standard
- Klassischä E61 bi 9 Bar
- Klassischä E61 mit süüferligem Durckaast
- E61 mit rasantem Hochschnällä vum Druc
- E61 mit schnäller Vorinfusion bis 9 Bar
- Dunkli Röschtig im Stil vu Espresso Forge
- Helli Röschtig im Stil vu Espresso Forge
- Durchflussprofil für Milchkaffigetränk
- Durchflussprofil für regulärä Espresso
- Mild und süässlich
- Liächtä Durchfluss bi 2,5 ml/Sek
- Durchflussprofil mit süüferliger Vorinfusic

Vorschau

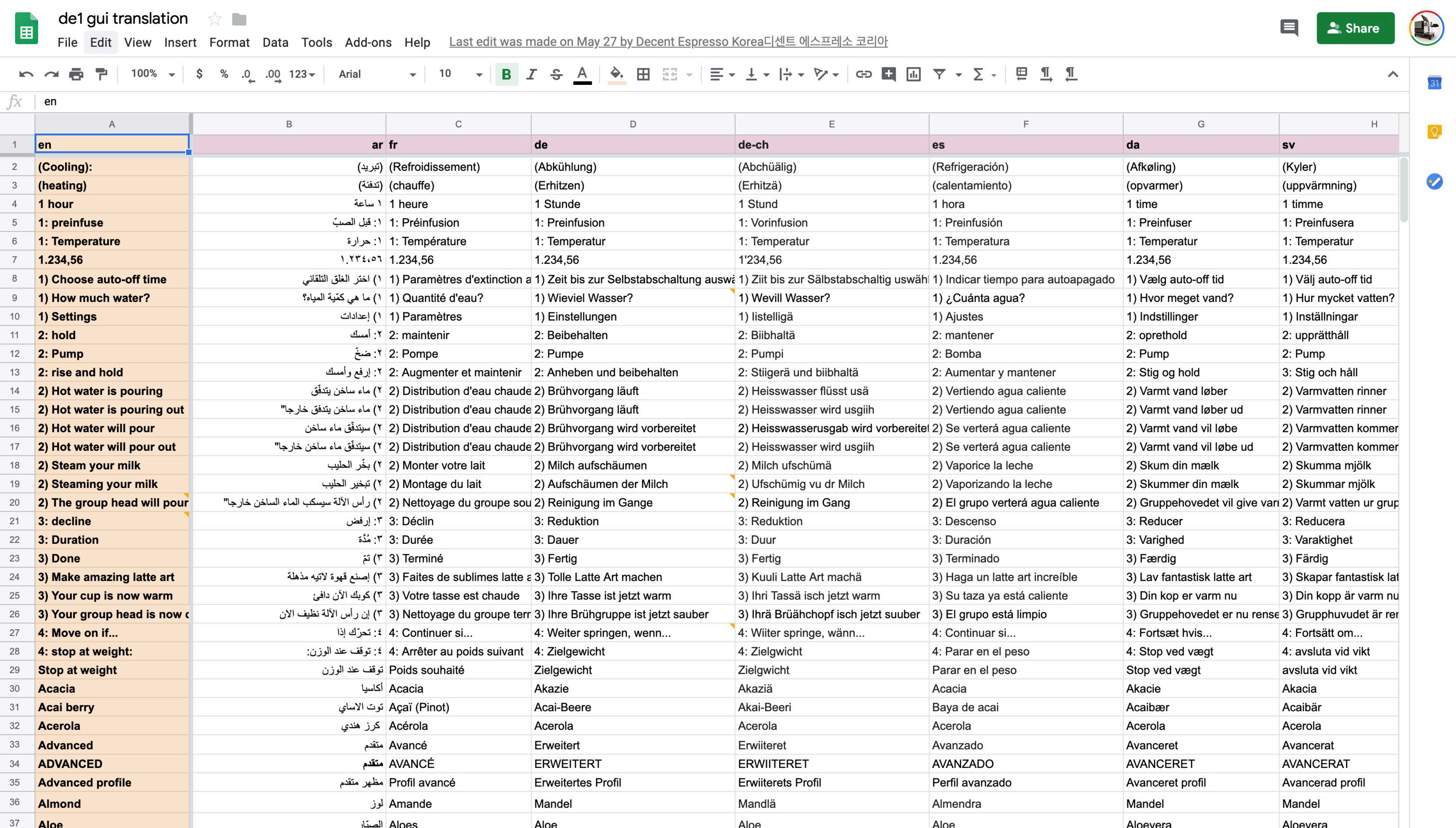
Beschriibig

Mir empfähled das Druckprofil, wells unter verschiedenschtä Bedingigä am ehestä guätä Espresso macht. Ds Verringerä vum Druck hilft, der Sürighalt ds reduziärä.

Ä Namä gii und spiicherä

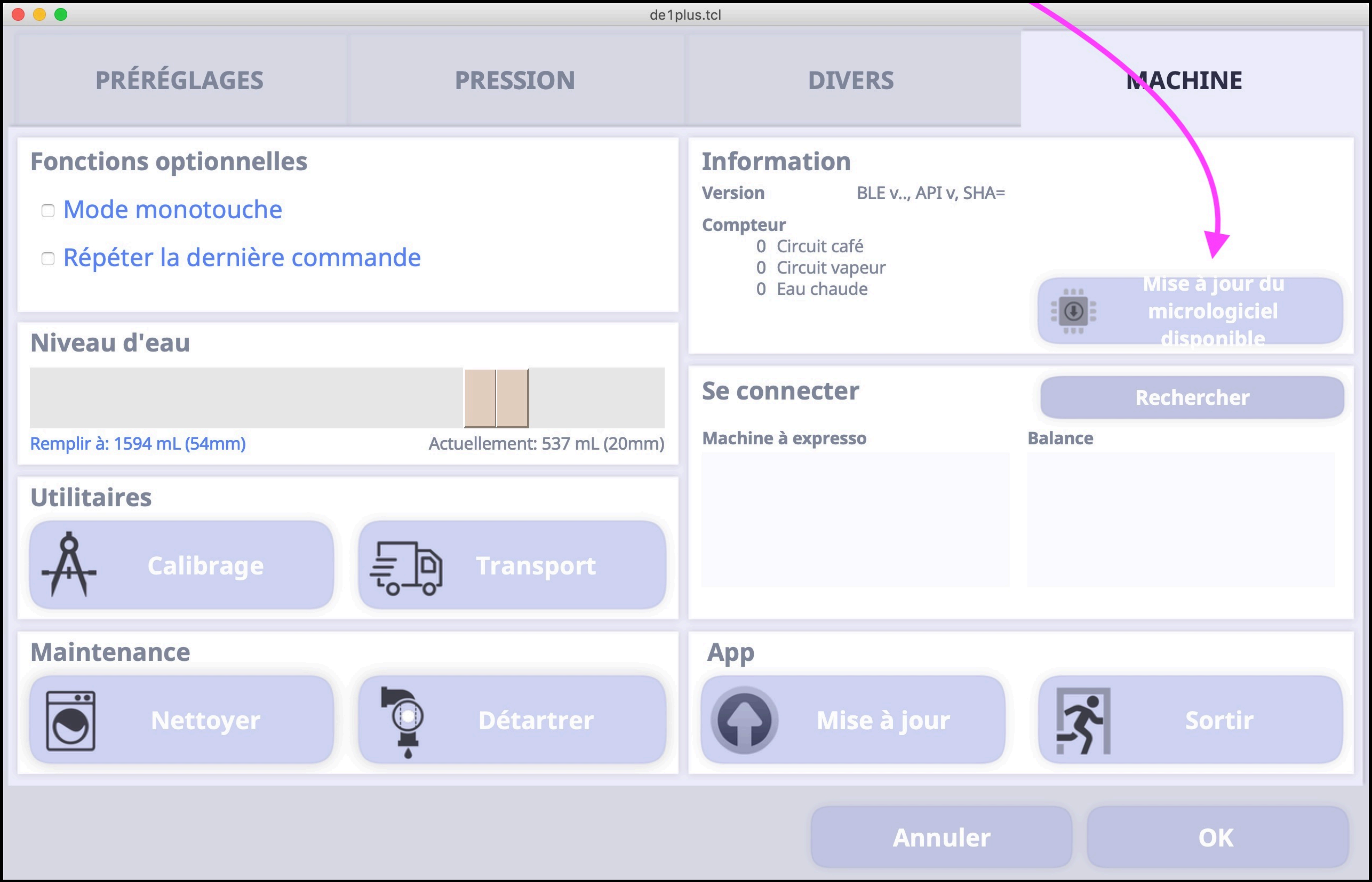
Ds beschti Druckprofil

Using Google Sheets to coordinate translations



	A	B	C	D	E	F	G	H
1	**en**	**ar**	**fr**	**de**	**de-ch**	**es**	**da**	**sv**
2	**(Cooling):**	(تبريد)	(Refroidissement)	(Abkühlung)	(Abchüälig)	(Refrigeración)	(Afkøling)	(Kyler)
3	**(heating)**	(تدفئة)	(chauffe)	(Erhitzen)	(Erhitzä)	(calentamiento)	(opvarmer)	(uppvärmning)
4	**1 hour**	١ ساعة	1 heure	1 Stunde	1 Stund	1 hora	1 time	1 timme
5	**1: preinfuse**	١: قبل الصبّ	1: Préinfusion	1: Preinfusion	1: Vorinfusion	1: Preinfusión	1: Preinfuser	1: Preinfusera
6	**1: Temperature**	١: حرارة	1: Température	1: Temperatur	1: Temperatur	1: Temperatura	1: Temperatur	1: Temperatur
7	**1.234,56**	١.٢٣٤،٥٦	1.234,56	1.234,56	1'234,56	1.234,56	1.234,56	1.234,56
8	**1) Choose auto-off time**	١) اختر الغلق التلقائي	1) Paramètres d'extinction a	1) Zeit bis zur Selbstabschaltung auswä	1) Ziit bis zur Sälbstabschaltig uswähl	1) Indicar tiempo para autoapagado	1) Vælg auto-off tid	1) Välj auto-off tid
9	**1) How much water?**	١) ما هي كمّية المياه؟	1) Quantité d'eau?	1) Wieviel Wasser?	1) Wevill Wasser?	1) ¿Cuánta agua?	1) Hvor meget vand?	1) Hur mycket vatten?
10	**1) Settings**	١) إعدادات	1) Paramètres	1) Einstellungen	1) Iistelligä	1) Ajustes	1) Indstillinger	1) Inställningar
11	**2: hold**	٢: أمسك	2: maintenir	2: Beibehalten	2: Biibhaltä	2: mantener	2: oprethold	2: upprätthåll
12	**2: Pump**	٢: ضخّ	2: Pompe	2: Pumpe	2: Pumpi	2: Bomba	2: Pump	2: Pump
13	**2: rise and hold**	٢: إرفع وأمسك	2: Augmenter et maintenir	2: Anheben und beibehalten	2: Stiigerä und biibhaltä	2: Aumentar y mantener	2: Stig og hold	3: Stig och håll
14	**2) Hot water is pouring**	٢) ماء ساخن يتدفّق	2) Distribution d'eau chaude	2) Brühvorgang läuft	2) Heisswasser flüsst usä	2) Vertiendo agua caliente	2) Varmt vand løber	2) Varmvatten rinner
15	**2) Hot water is pouring out**	٢) ماء ساخن يتدفق خارجا"	2) Distribution d'eau chaude	2) Brühvorgang läuft	2) Heisswasser wird usgiih	2) Vertiendo agua caliente	2) Varmt vand løber ud	2) Varmvatten rinner
16	**2) Hot water will pour**	٢) سيتدفّق ماء ساخن	2) Distribution d'eau chaude	2) Brühvorgang wird vorbereitet	2) Heisswasserusgab wird vorbereitet	2) Se verterá agua caliente	2) Varmt vand vil løbe	2) Varmvatten kommer
17	**2) Hot water will pour out**	٢) سيتدفّق ماء ساخن خارجا"	2) Distribution d'eau chaude	2) Brühvorgang wird vorbereitet	2) Heisswasser wird usgiih	2) Se verterá agua caliente	2) Varmt vand vil løbe ud	2) Varmvatten kommer
18	**2) Steam your milk**	٢) بخّر الحليب	2) Monter votre lait	2) Milch aufschäumen	2) Milch ufschümä	2) Vaporice la leche	2) Skum din mælk	2) Skumma mjölk
19	**2) Steaming your milk**	٢) تبخير الحليب	2) Montage du lait	2) Aufschäumen der Milch	2) Ufschümig vu dr Milch	2) Vaporizando la leche	2) Skummer din mælk	2) Skummar mjölk
20	**2) The group head will pour**	٢) رأس الآلة سيسكب الماء الساخن خارجا"	2) Nettoyage du groupe sou	2) Reinigung im Gange	2) Reinigung im Gang	2) El grupo verterá agua caliente	2) Gruppehovedet vil give varı	2) Varmt vatten ur grup
21	**3: decline**	٣: إرفض	3: Déclin	3: Reduktion	3: Reduktion	3: Descenso	3: Reducer	3: Reducera
22	**3: Duration**	٣: مُدَّة	3: Durée	3: Dauer	3: Duur	3: Duración	3: Varighed	3: Varaktighet
23	**3) Done**	٣) تمّ	3) Terminé	3) Fertig	3) Fertig	3) Terminado	3) Færdig	3) Färdig
24	**3) Make amazing latte art**	٣) إصنع قهوة لاتيه مذهلة	3) Faites de sublimes latte a	3) Tolle Latte Art machen	3) Kuuli Latte Art machä	3) Haga un latte art increíble	3) Lav fantastisk latte art	3) Skapar fantastisk lat
25	**3) Your cup is now warm**	٣) كوبك الآن دافئ	3) Votre tasse est chaude	3) Ihre Tasse ist jetzt warm	3) Ihri Tassä isch jetzt warm	3) Su taza ya está caliente	3) Din kop er varm nu	3) Din kopp är varm nu
26	**3) Your group head is now c**	٣) إن رأس الآلة نظيف الان	3) Nettoyage du groupe terr	3) Ihre Brühgruppe ist jetzt sauber	3) Ihrä Brüähchopf isch jetzt suuber	3) El grupo está limpio	3) Gruppehovedet er nu rense	3) Grupphuvudet är rer
27	**4: Move on if...**	٤: تحرّك إذا	4: Continuer si...	4: Weiter springen, wenn...	4: Wiiter springe, wänn...	4: Continuar si...	4: Fortsæt hvis...	4: Fortsätt om...
28	**4: stop at weight:**	٤: توقف عند الوزن:	4: Arrêter au poids suivant	4: Zielgewicht	4: Zielgwicht	4: Parar en el peso	4: Stop ved vægt	4: avsluta vid vikt
29	**Stop at weight**	توقف عند الوزن	Poids souhaité	Zielgewicht	Zielgwicht	Parar en el peso	Stop ved vægt	avsluta vid vikt
30	**Acacia**	أكاسيا	Acacia	Akazie	Akaziä	Acacia	Akacie	Akacia
31	**Acai berry**	توت الاساي	Açaï (Pinot)	Acai-Beere	Akai-Beeri	Baya de acai	Acaibær	Acaibär
32	**Acerola**	كرز هندي	Acérola	Acerola	Acerola	Acerola	Acerola	Acerola
33	**Advanced**	متقدم	Avancé	Erweitert	Erwiiteret	Avanzado	Avanceret	Avancerat
34	**ADVANCED**	**متقدم**	AVANCÉ	ERWEITERT	ERWIITERET	AVANZADO	AVANCERET	AVANCERAT
35	**Advanced profile**	مظهر متقدم	Profil avancé	Erweitertes Profil	Erwiiterets Profil	Perfil avanzado	Avanceret profil	Avancerad profil
36	**Almond**	لوز	Amande	Mandel	Mandlä	Almendra	Mandel	Mandel
37	**Aloe**	الصبّار	Aloes	Aloe	Aloe	Aloe	Aloevera	Aloevera

Though challenges remain



de1plus.tcl

PRÉRÉGLAGES | PRESSION | DIVERS | MACHINE

Fonctions optionnelles

□ Mode monotouche

□ Répéter la dernière commande

Niveau d'eau

Remplir à: 1594 mL (54mm)

Actuellement: 537 mL (20mm)

Utilitaires

Calibrage

Transport

Maintenance

Nettoyer

Détartrer

Information

Version BLE v.., API v, SHA=

Compteur

0 Circuit café

0 Circuit vapeur

0 Eau chaude

Mise à jour du micrologiciel disponible

Se connecter

Rechercher

Machine à expresso

Balance

App

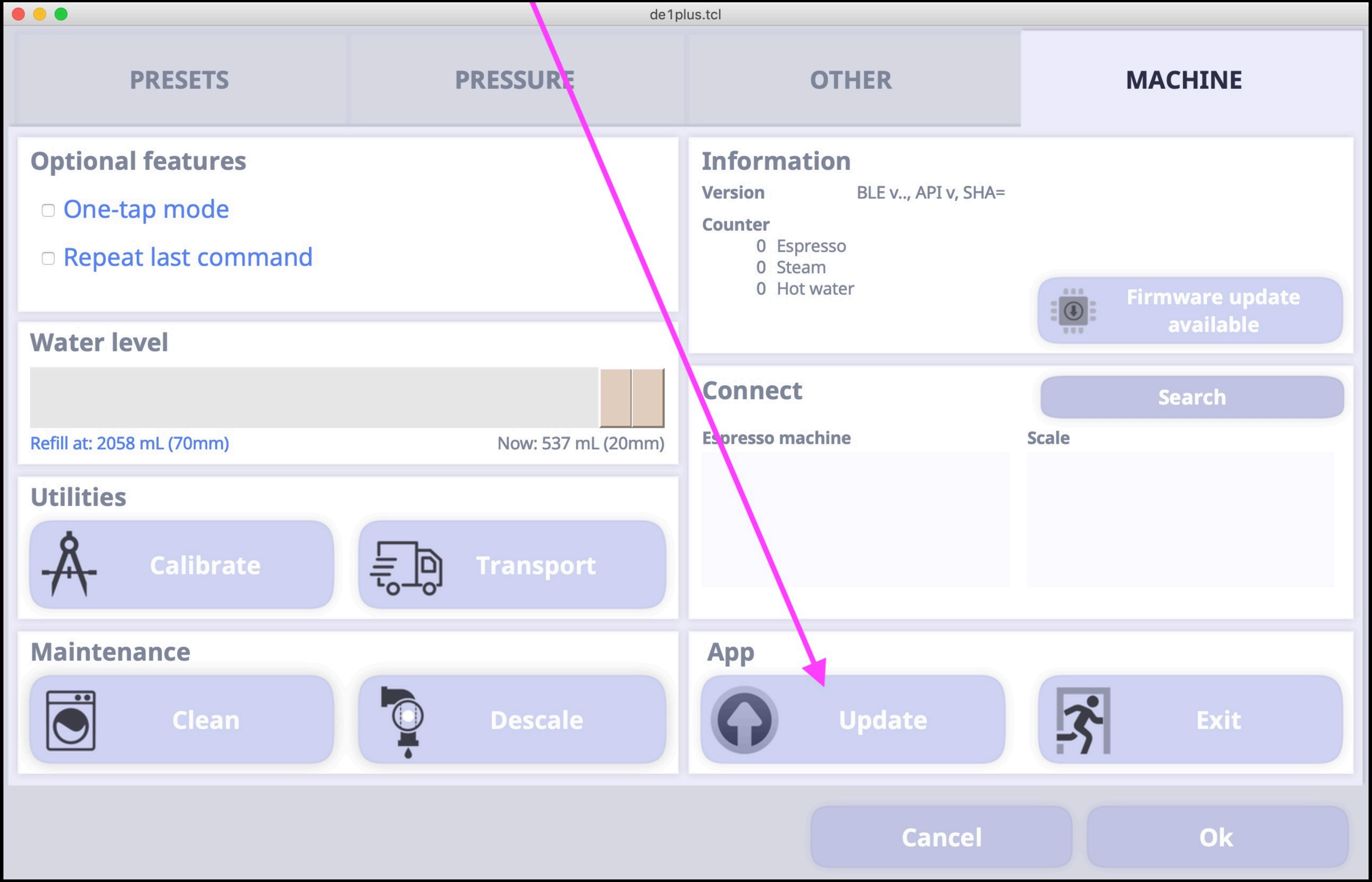
Mise à jour

Sortir

Annuler

OK

Incremental updates via https and a SHA256 file manifest



de1plus.tcl

Optional features

□ One-tap mode

□ Repeat last command

Water level

Refill at: 2058 mL (70mm)

Now: 537 mL (20mm)

Utilities

Maintenance

Information

Version BLE v.., API v, SHA=

Counter
0 Espresso
0 Steam
0 Hot water

Connect

Espresso machine

Scale

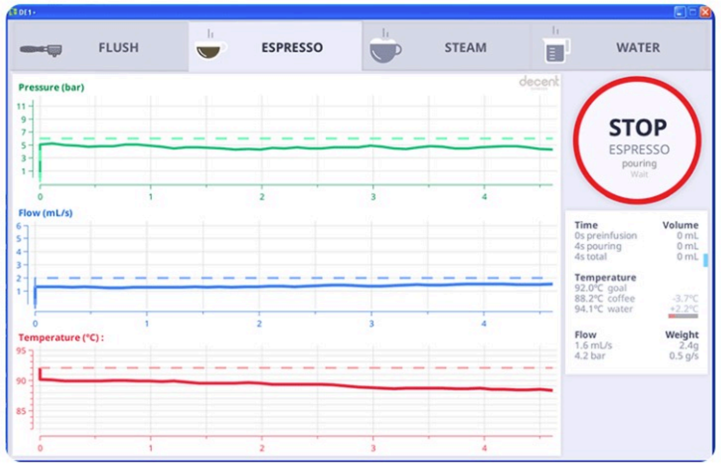
App

Ready-to-run cross-platform thanks to “undroidwish”

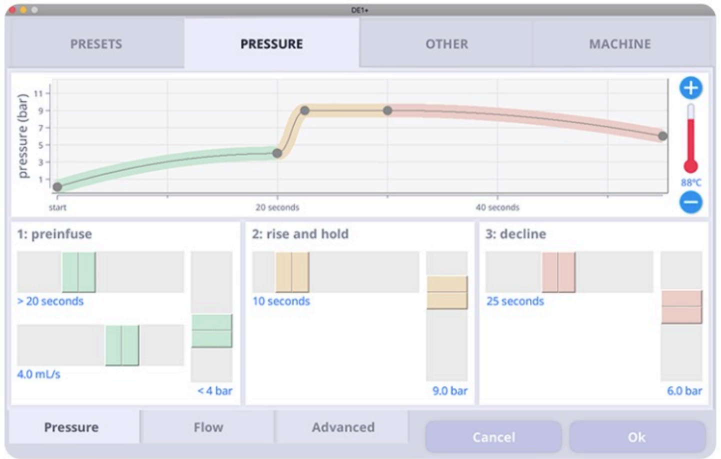
Espresso Making Software

You can try out our espresso making software on your computer.

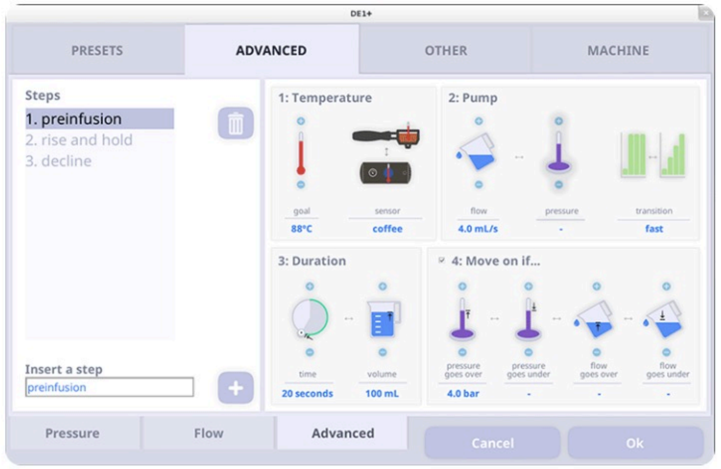
This will help you experience what it would be like to own our espresso machine. These programs also make it easier for people to develop their own extensions, skins and translations.



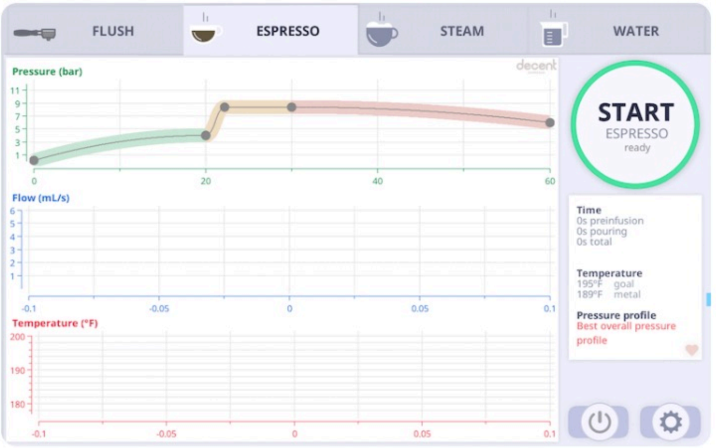
For Windows



For MacOS



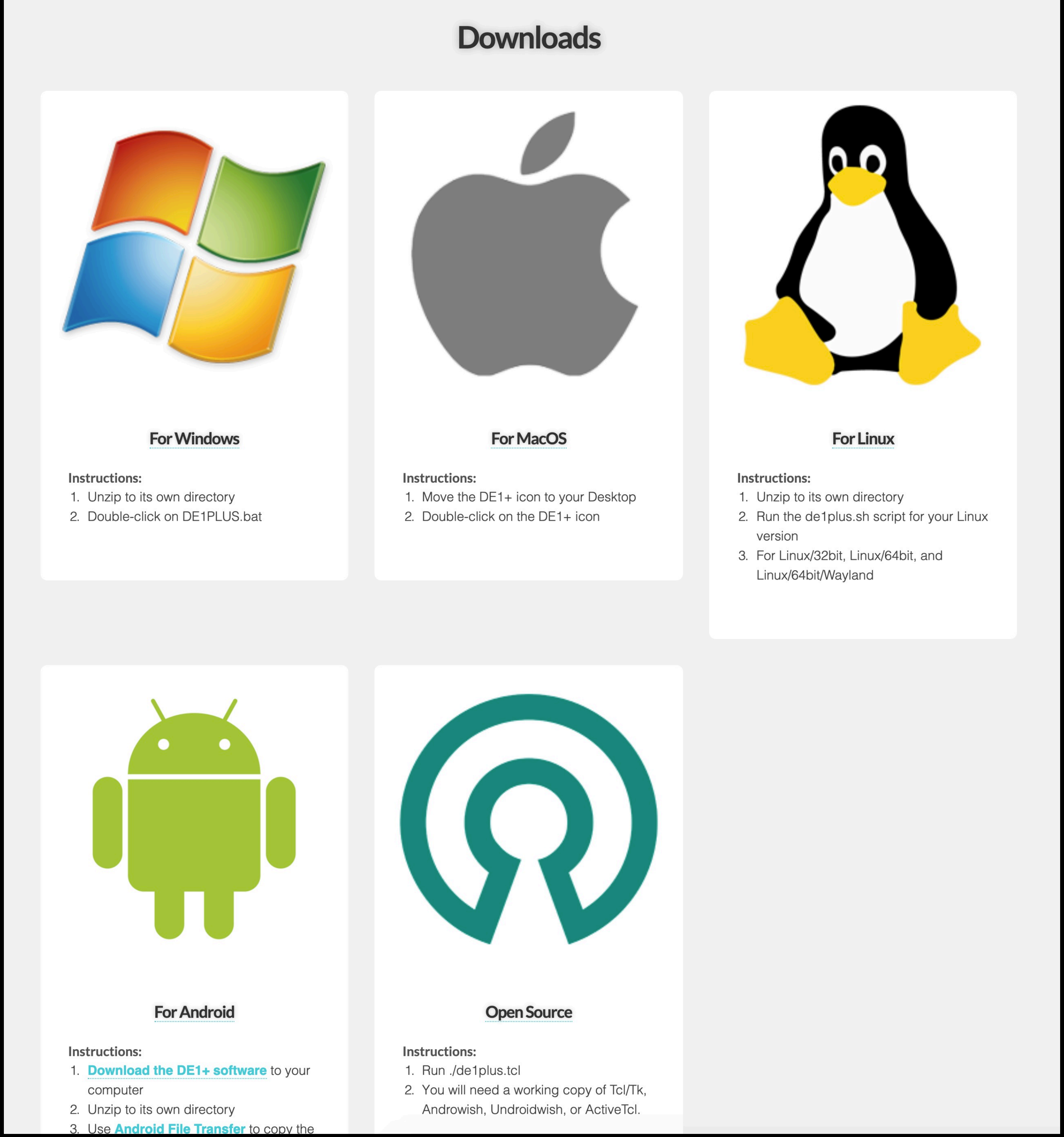
For Linux



For Android

Binary and source downloads

https://decentespresso.com/downloads



Downloads

For Windows

Instructions:
1. Unzip to its own directory
2. Double-click on DE1PLUS.bat

For MacOS

Instructions:
1. Move the DE1+ icon to your Desktop
2. Double-click on the DE1+ icon

For Linux

Instructions:
1. Unzip to its own directory
2. Run the de1plus.sh script for your Linux version
3. For Linux/32bit, Linux/64bit, and Linux/64bit/Wayland

For Android

Instructions:
1. Download the DE1+ software to your computer
2. Unzip to its own directory
3. Use Android File Transfer to copy the

Open Source

Instructions:
1. Run ./de1plus.tcl
2. You will need a working copy of Tcl/Tk, Androwish, Undroidwish, or ActiveTcl.

but …

Security and sandboxing is causing real problems on all platforms (except Linux).

and Bluetooth support is Android only, for now

Current Issues

How to distribute 3rd party skins that are quickly evolving, to less technical people?

What kind of generalized extension mechanism should I do? (beyond skins, such as Amazon, Twitter, REST)

How to contain bugs and solve them when people can have highly customized installs?

How to handle varying-quality patches

Strengths of this approach

Easy Tcl on-boarding

(especially with undroidwish “batteries included”)

Avoids feature bloat in the main app

Source is on the tablet:
small changes have immediate effect

Desktop development environment

(more productive and less frustrating than debugging on a tablet)

Big next steps

An API proxy, enabling

Javascript in Browser->
Cloud-based App server->
Android app->
Bluetooth

Big next steps

Cloud based espresso data storage

Data mining
Academic use
Progress in the coffee field
Sharing of profiles
Data privacy

Big next steps

App store

- All apps free or not?
- Easy sharing of espresso profiles
- Distributed responsibility for skins
- Possibility of bad actors

Big next steps

SNMP support

So cafes can manage espresso machines as if they were servers

Big next steps

iOS support

To avoid the religion wars about platforms

Big next steps

Linux BLE support

Because Android’s future on Tablets is not looking promising

Binary and source downloads

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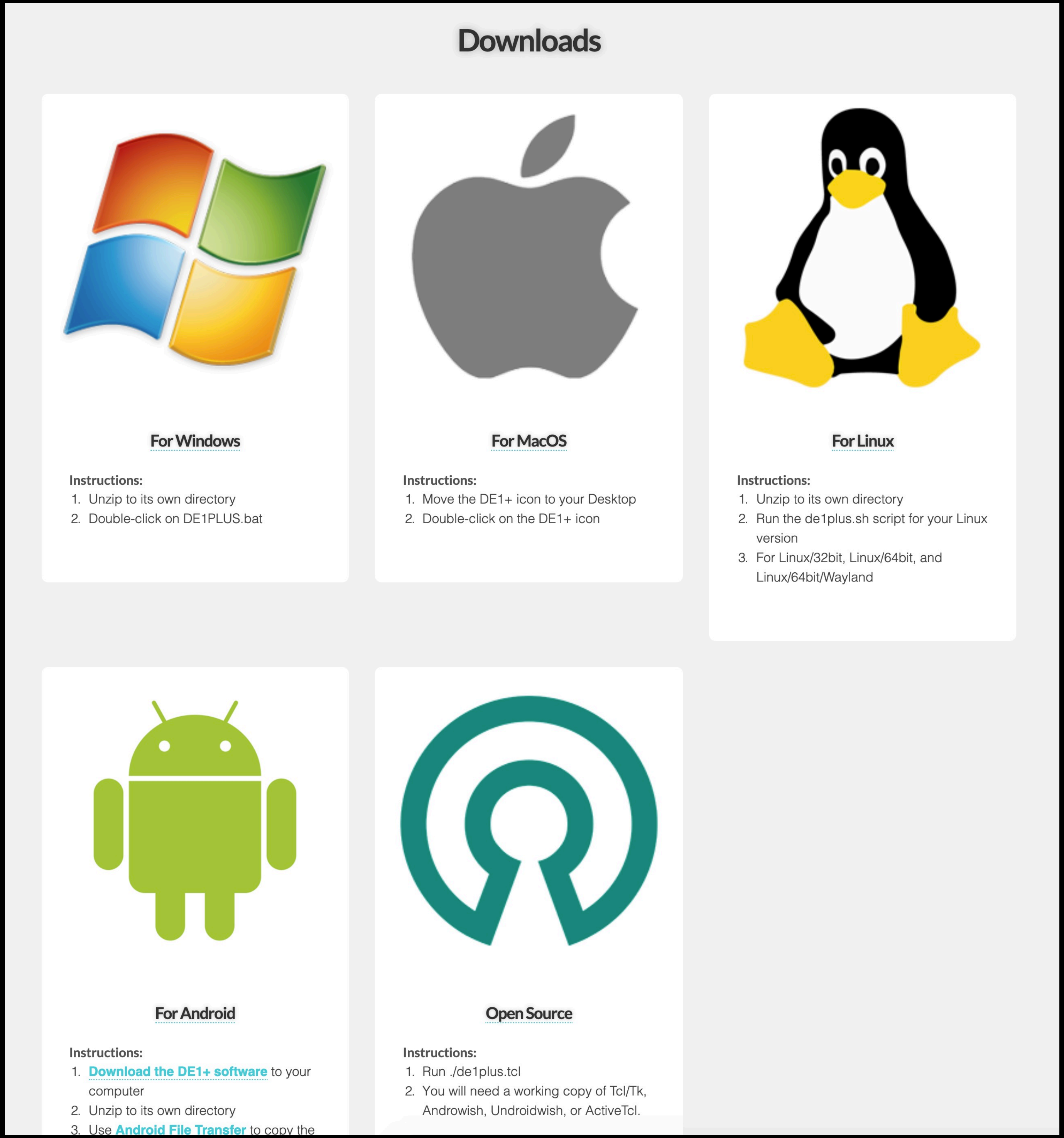

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Thank you!

John Buckman
john@redmood.com