

A Kiss Ada GUI - Xavier Petit & Stéphane Rivière



Sowebio

main company

Web sites

SAAS

Graphics

Marketing

Printing

Sowneo

tech subsidiary

Facilities management

Server clustering

Cloud escaping

Software development

Electronic design

Xavier Petit

Backend developer

Automation

Optimization

Infra. management

Teaching software

Stéphane Rivière

Electronic engineer

Software developer

Comms specialist

On-board military apps

Business-critical apps

Choose the right language for the right project! Can the obvious be a lie?

Should a well-designed language be able to do everything?

After several years of in-house and customer development, it seems that this is true.

Our definition of KISS



Simplicity is the ultimate sophistication.
Leonardo da Vinci

It seems that perfection is reached not when there is nothing left to add, but when there is nothing left to take away.
Antoine de Saint-Exupéry

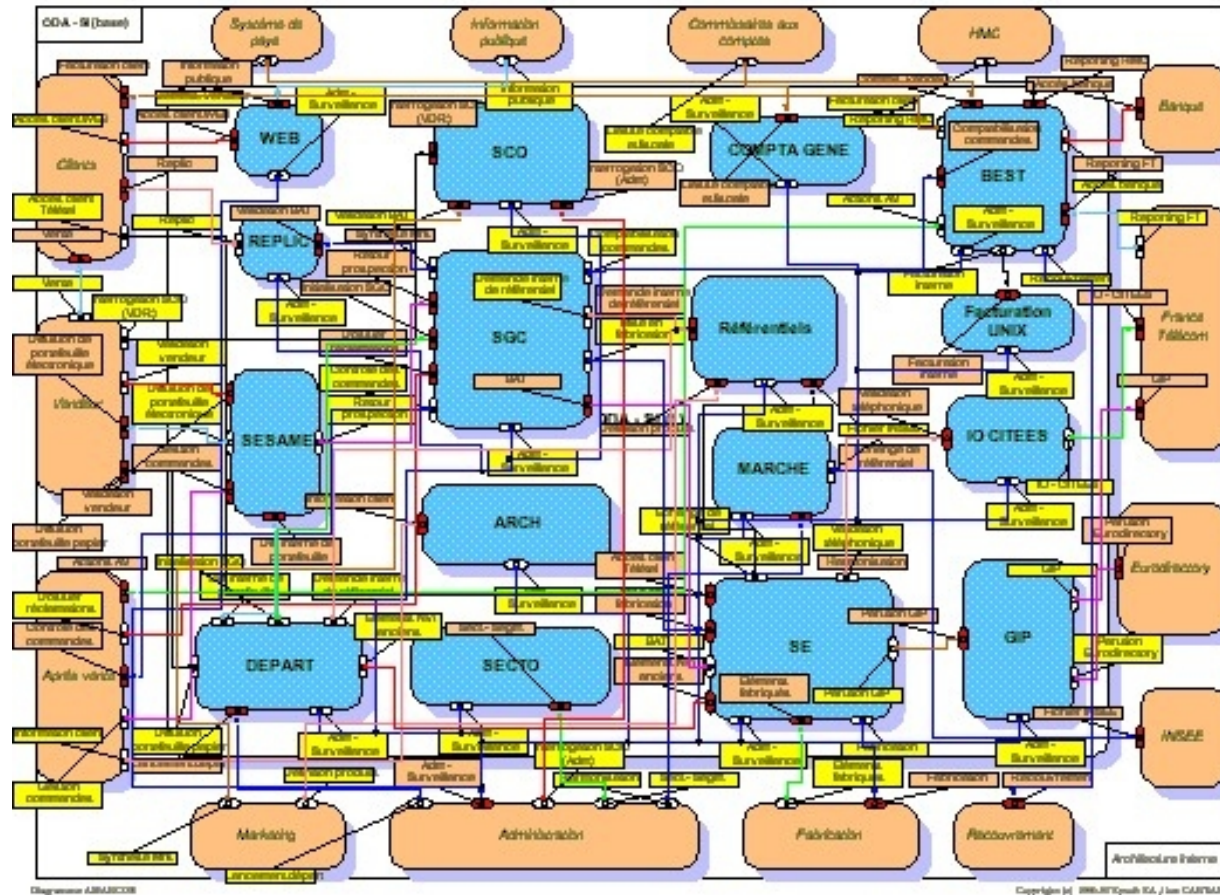


Make everything as simple as possible, but not simpler.
Albert Einstein

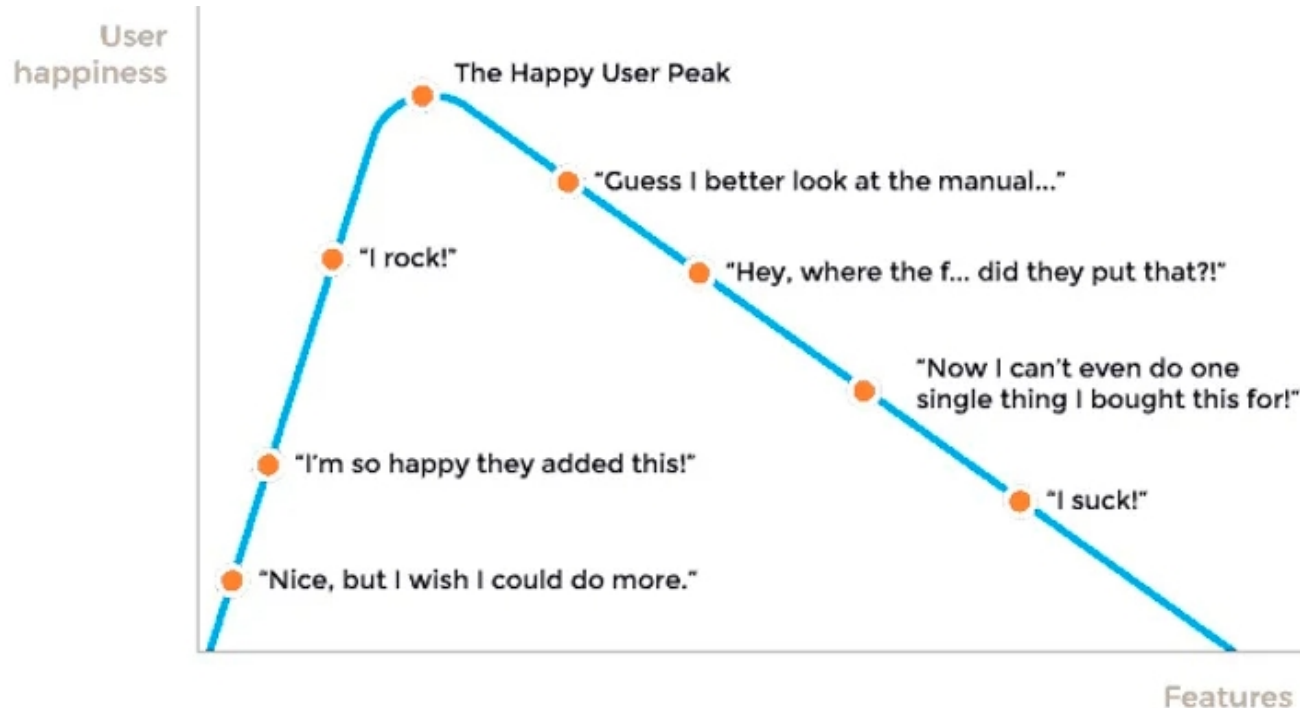


Craftsmen laboriously make things that work.

“Geniuses” make incomprehensible stuff that doesn't work well, but works just well enough for us to take a long time to admit that, in fact, “it was crap”.



Today's development environments have become bloated. They can do anything.



But
at
what
cost?

Image source :
<https://www.plutora.com/blog/feature-creep-problem>

Current GUI developments are not
productive

Too many systems, too many terminals, too many
“changing languages”, too many disparate
screen sizes, too many keyboards, mice or
fingers as inputs devices.



Datas schemas should be in the code

Screens should be in the code

Everything should be in the code

A code using one language

A language for one framework

v20 - servers cluster manager

Genesisx - A servers cluster manager.
Copyright [C] Sowebio SARL 2020-2025, according to GPLv3.
gnx v3.5 - **v20** v0.11 - build 2024-09-14 11:59:01

Usage: gnx class command [value] [options]

```
classes
  app      Application management
  cluster  Cluster management
  db       Genesix database utilities
  domain   Domain name management
  group    Group of instances management
  info     General information
  instance Instance management
  ip       Ip management
  node     Nodes management
  owner    Owner management
  remote   Remote functions
  service  Service functions
  user     User management
```

```
--address=IP ADDRESS      IP Address
--api-ak=APPKEY           Api AK [Application Key]
--api-as=APPSECRET        Api AS [Application Secret]
--api-ck=CONSUMERKEY      Api CK [Consumer Key]
--api-ep=ENDPOINT         Api End Point
--app=1... 400            Application number
--backup-files=NULL, 1... 200 Backup instance for files
--backup-images=NULL, 1... 200 Backup instance for instances images
--backup-server=DOMAINNAME Backup server [Domain name]
--cidr=CIDRPREFIX         CIDR Prefix /32 to /24
--comment=TEXT            Comment
--country=CIDRPREFIX      ISO 3166-2 Country code [fr, de, etc.]
--cpu-list=2...CPUMAX     Logical CPU used
--cpu=1... 63             Total number of CPUs on node, starting at 0
--credential-list=SEE MANUAL Credentials list
--db-name=TEXT            App database name
--db-login=LOGIN          App database login
--db-password=PASSWORD   App database password
--disk=3... 8192 GB       Disk size
--domain=DOMAIN.TLD       Cluster domain

.../...
```

v22 - redefining web development

No JS/HTML/CSS hell

Defining block and sub-blocks of widgets

Fitting themselves the responsive way

From the 43" 4K workstation to the smallest 5" smartphone

v22 - A first attempt In Real Life

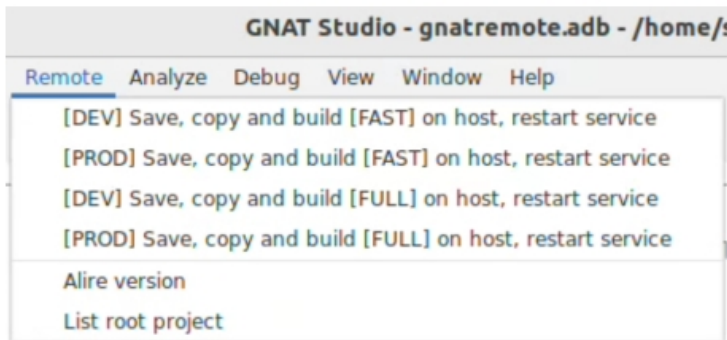
A general-purpose framework ready for all types of development

“Dogfooding” to improve both v22 framework and applications

Several applications developed in-house

Our latest software is a management application for hundreds of vending machines

Fast Deploying with GNAT Remote



```
Gnatremote --action=dev_save_copy_build_full_restart
```

```
GnatRemote - Gnatstudio remote utility
Copyright [C] Sowebio SARL 2023-2025
gnatremote v0.9 - v22 v0.6 - build 2025-02-09 14:16:01
```

```
20250209-182253.588 - INIT - MSG - gnatremote.Init.App > Configuration file ../gnatremote.cfg loaded
```

```
20250209-182253.588 - ACTION - --- - INPUT PARAMETERS -----
```

```
20250209-182253.591 - ACTION - MSG - Action required: dev_save_copy_build_full_restart
```

```
20250209-182253.591 - ACTION - MSG - Local project directory:
```

```
/home/sr/Sowebio/informatique/dev/prv/hex01
```

```
20250209-182253.591 - ACTION - MSG - Local shared directory:
```

```
/home/sr/Sowebio/informatique/dev/prv/hex01/hex01
```

```
20250209-182253.592 - ACTION - MSG - Local program directory:
```

```
/home/sr/Sowebio/informatique/dev/prv/hex01/hex01_net
```

```
20250209-182253.592 - ACTION - MSG - Remote build directory:
```

```
root@i188c1. .... ***/root/build/hex01
```

```
20250209-182253.592 - ACTION - MSG - Remote run dir directory: root@i188c1. .... ***/opt/hex01
```

```
20250209-182253.592 - ACTION - MSG - Remote run dev directory: root@i188c1. .... ***/opt/hex01/dev
```

```
20250209-182253.593 - ACTION - MSG - Remote run prod directory: root@i188c1. .... ***/opt/hex01/prod
```

Fast deploying with GNAT Remote

```
20250209-182253.593 - ACTION - --- - GNATREMOTE.COPY_SHARED > COPY COMMON PROJECT SOURCES
20250209-182253.593 - ACTION - MSG - Net.Rsync > Excluding: .*
20250209-182253.594 - ACTION - MSG - Net.Rsync > Excluding: prg
20250209-182253.594 - ACTION - MSG - Net.Rsync > Excluding: obj
sent 10.198 bytes received 27 bytes 2.921,43 bytes/sec
total size is 13.522.374 speedup is 1.322,48
20250209-182258.424 - ACTION - MSG - Net.Rsync > Copy: ../hex01/hex01/ to /root/build/hex01/hex01 successful

20250209-182258.425 - ACTION - --- - GNATREMOTE.COPY_SOURCES > COPY BUILD FILES AND PROGRAM SOURCES
20250209-182258.425 - ACTION - MSG - Net.Rsync > Excluding: .*
20250209-182258.425 - ACTION - MSG - Net.Rsync > Excluding: prg
20250209-182258.426 - ACTION - MSG - Net.Rsync > Excluding: obj
20250209-182259.611 - ACTION - MSG - Net.Rsync > Directory_Rx exists, no need to create it
sending incremental file list
sent 22.664 bytes received 2.657 bytes 7.234,57 bytes/sec
total size is 223.371 speedup is 8,82
20250209-182302.568 - ACTION - MSG - Net.Rsync > Copy: ../hex01_net/ to /root/build/hex01/hex01_net successful

20250209-182302.569 - ACTION - --- - GNATREMOTE.BUILD > HEX01_NET -----
20250209-182304.605 - ACTION - MSG - /root/build/hex01/hex01_net/obj successfully deleted
20250209-182415.556 - ACTION - MSG - Remote command cd /root/build/hex01/hex01_net ; alr build ; ls -l ./prg on
root@i188c1.genesix.org successful
Note: Building hex01_net=0.1.0-dev/hex01_net.gpr...
```

Fast deploying with GNAT Remote

```
Setup
[mkdir]      object directory for project Hex01_Net
Compile
[Ada]        hex01_net.adb
[Ada]        hex01_def.adb
[Ada]        v22.adb
.../...
[Ada]        v22-gui-footer.adb
[Ada]        v22-gui-header.adb
[Ada]        v22-gui-main_menu.adb
[Ada]        v22-gui-breadcrumb.adb
[Ada]        v22-gui-user_menu.adb
Bind
.../...
[link]       hex01_net.adb
Success: Build finished successfully in 67.66 seconds.
total 21828
```

```
20250209-182415.556 - ACTION - --- - GNATREMOTE.RESTART > HEX01_NET -----
20250209-182418.734 - ACTION - MSG - Remote command systemctl stop hex01_net_dev on root@i188c1.*** successful
20250209-182419.925 - ACTION - MSG - Remote command cp --force /root/build/hex01/hex01_net/prg/hex01_net
/opt/hex01/dev/hex01_net_dev on root@i188c1.*** successful
20250209-182420.607 - ACTION - MSG - Remote command systemctl start hex01_net_dev on root@i188c1.*** successful
20250209-182420.607 - ACTION - MSG - Action successful

20250209-182421.721 - EXIT   - MSG - Total execution time: 0h01m28s
```

v22 - Modular & Ready for action

Cfg Configuration files **Fls** Files and folders **Gui** Gnoga User Interface **Gui.Crud** CRUD management **Msg** Logging **Net** Network SSH API **Pdf** Pdf creation **Prg** Program related **Sql** SQLite & MySQL **Sys** System related **Tio** Text console and text files **Uxf** UTF-8 UXStrings files **Uxs** UTF-8 UXStrings extensions

Refining frameworks

v22 - A well documented environment



Ada Development Environment on Linux

< 100 pages about
building an Ada
Linux setup with Alire
and GNAT Remote
fast deploying tool



v22 Ada Framework User Manual



Sowebio SARL
15, rue du Temple
17310 - St Pierre d'Oléron - France
Capital 15 000 EUR - SIRET 844 060 046 00019 - RCS La Rochelle - APE 6201Z - TVA FR0844060046

300 pages about our
GP framework with
responsive GUI
building by blocks >



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Ada Development Environment on Linux		
www.sowebio.fr dev@sowebio.fr		ed. 88 of 2025/05/23 page 3 of 99
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v22 Ada Framework User Manual		
www.sowebio.fr dev@sowebio.fr		ed. 178 of 2025/05/23 page 3 of 290
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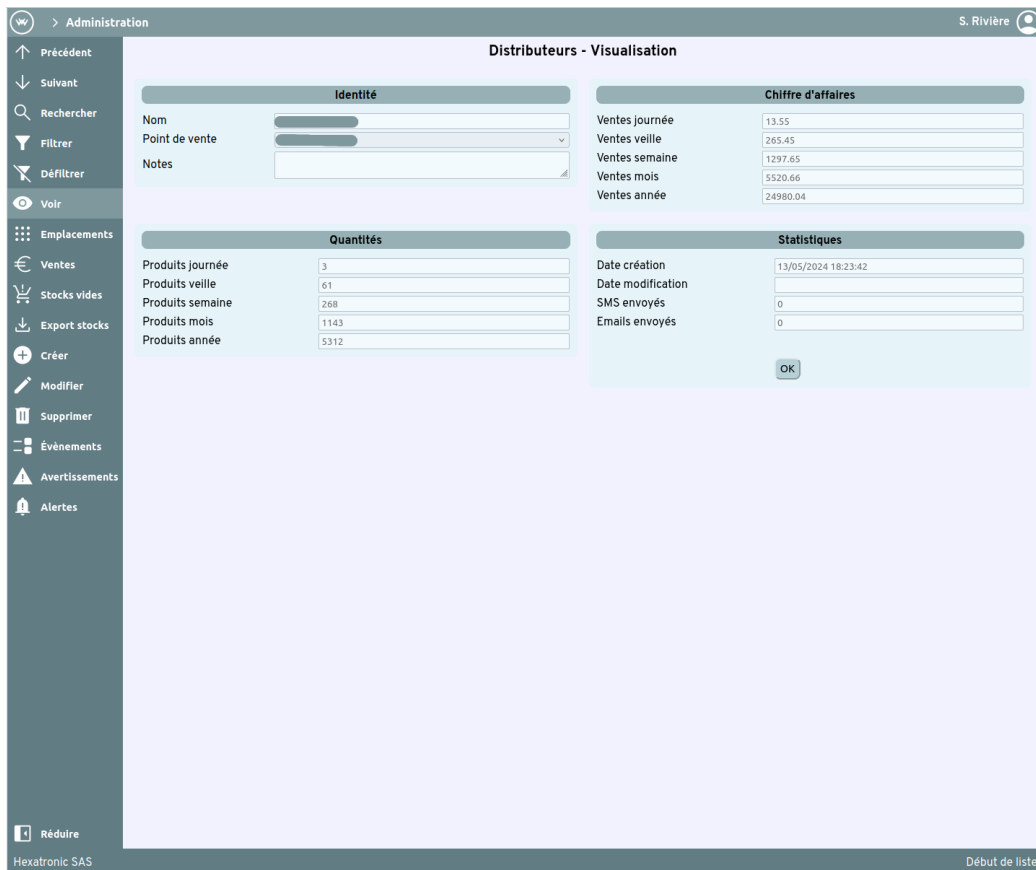
A vending machine application

Telemetry server with in-house VPN / LTE network (2K SLOC)

Web server with responsive interface (4K SLOC)

Backgrounds tasks for emails and sms alerting, sales consolidation, logs cleaning, backups, etc. (1K SLOC)

3 Linux services - 7K SLOC (plus v22 9K SLOC)



Distributeurs - Visualisation

Identité

Nom:

Point de vente:

Notes:

Chiffre d'affaires

Ventes journée:

Ventes veille:

Ventes semaine:

Ventes mois:

Ventes année:

Quantités

Produits journée:

Produits veille:

Produits semaine:

Produits mois:

Produits année:

Statistiques

Date création:

Date modification:

SMS envoyés:

Emails envoyés:

OK

< Station view

From 43" 4K to
the smallest 5"
smartphones

Phone view >



Distributeurs - Visualisation

Identité

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Notes:

Chiffre d'affaires

Ventes journée:

Ventes veille:

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Produits veille:

Produits semaine:

Produits mois:

Produits année:

Statistiques

Date création:

Date modification:

SMS envoyés:

Emails envoyés:

OK

Administration S. Rivière

Précédent

Suivant

Actualiser

Filtrer

Défiltrer

Voir

Export ventes

Liste des Ventes

GDH réception	Distributeur	Emp.	Description	Montant	TVA	Reg	Id trame	GDH émission	Id
25/05/2025 10:40:08	Magasin Noyal 35	213	213 PAIN DE CAMPAGNE	3.40€	5.50	1	1331	25/05/2025 08:39:27	28846
25/05/2025 10:40:08	Magasin Noyal 35	122	122 PATE DE CAMPAGNE	2.50€	5.50	1	1331	25/05/2025 08:39:27	28845
25/05/2025 10:40:08	Magasin Noyal 35	121	121 RILLETES	3.40€	5.50	1	1331	25/05/2025 08:39:27	28844
25/05/2025 09:35:32	Magasin Noyal 35	151	151 SAUCISSE X4	6.90€	5.50	1	1330	25/05/2025 07:35:22	28843
25/05/2025 08:47:34	Magasin Noyal 35	234	234 OEUF6 X6	2.70€	5.50	1	1329	25/05/2025 06:47:14	28842
25/05/2025 08:47:34	Magasin Noyal 35	161	161 SKYR	3.95€	5.50	1	1329	25/05/2025 06:47:14	28841
24/05/2025 22:15:37	Magasin Noyal 35	237	237 OEUF6 X12	5.40€	5.50	1	1328	24/05/2025 20:15:24	28832
24/05/2025 19:46:56	Magasin Noyal 35	230	230 PAIN LE ZEX MULTI GRAINES	3.95€	5.50	1	1315	24/05/2025 17:46:46	28827
24/05/2025 19:19:22	Magasin Noyal 35	230	230 PAIN LE ZEX MULTI GRAINES	3.95€	5.50	1	1314	24/05/2025 17:19:09	28822
24/05/2025 18:57:10	Magasin Noyal 35	237	237 OEUF6 X12	5.40€	5.50	1	1313	24/05/2025 16:56:59	28821
24/05/2025 18:49:24	Magasin Noyal 35	221	221 PAIN DE CAMPAGNE	3.00€	5.50	1	1312	24/05/2025 16:48:37	28820
24/05/2025 18:49:24	Magasin Noyal 35	213	213 RILLETES	3.40€	5.50	1	1312	24/05/2025 16:48:37	28819
24/05/2025 18:49:24	Magasin Noyal 35	171	171 YAOURT	2.90€	5.50	1	1312	24/05/2025 16:48:37	28818
24/05/2025 18:49:24	Magasin Noyal 35	165	165 YAOURT	4.90€	5.50	1	1312	24/05/2025 16:48:37	28817
24/05/2025 18:49:24	Magasin Noyal 35	195	195 YAOURT	4.50€	5.50	1	1312	24/05/2025 16:48:37	28816
24/05/2025 18:38:22	Magasin Noyal 35	233	233 YAOURT	2.70€	5.50	1	1311	24/05/2025 16:37:58	28805
24/05/2025 18:38:22	Magasin Noyal 35	140	140 YAOURT	4.50€	5.50	1	1311	24/05/2025 16:37:58	28804
24/05/2025 18:34:28	Magasin Noyal 35	229	229 YAOURT	4.60€	5.50	1	1310	24/05/2025 16:34:13	28803
24/05/2025 18:19:55	Magasin Noyal 35	123	123 YAOURT	4.00€	5.50	1	1309	24/05/2025 16:19:30	28799
24/05/2025 18:19:55	Magasin Noyal 35	231	231 YAOURT	4.60€	5.50	1	1309	24/05/2025 16:19:30	28798
24/05/2025 18:17:43	Magasin Noyal 35	234	234 YAOURT	2.70€	5.50	1	1308	24/05/2025 16:17:34	28797
24/05/2025 18:04:33	Magasin Noyal 35	231	231 YAOURT	4.60€	5.50	1	1307	24/05/2025 16:04:20	28793
24/05/2025 18:02:31	Magasin Noyal 35	170	170 YAOURT	2.60€	5.50	1	1306	24/05/2025 16:02:10	28792
24/05/2025 18:02:31	Magasin Noyal 35	165	165 YAOURT	4.90€	5.50	1	1306	24/05/2025 16:02:10	28791
24/05/2025 17:38:45	Magasin Noyal 35	150	150 YAOURT	8.95€	5.50	1	1305	24/05/2025 15:38:10	28787
24/05/2025 17:38:45	Magasin Noyal 35	190	190 YAOURT	7.50€	5.50	1	1305	24/05/2025 15:38:10	28786
24/05/2025 17:38:45	Magasin Noyal 35	141	141 YAOURT	5.95€	5.50	1	1305	24/05/2025 15:38:10	28785
24/05/2025 17:25:43	Magasin Noyal 35	164	164 YAOURT	4.80€	5.50	1	1304	24/05/2025 15:25:24	28783
24/05/2025 17:25:43	Magasin Noyal 35	164	164 YAOURT	4.80€	5.50	1	1304	24/05/2025 15:25:24	28782
24/05/2025 17:12:52	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1303	24/05/2025 15:12:37	28781
24/05/2025 16:59:20	Magasin Noyal 35	221	221 COOKIE CHOCOLAT BLANC / FRAMBOISE	3.00€	5.50	1	1302	24/05/2025 14:58:59	28780
24/05/2025 16:47:58	Magasin Noyal 35	173	173 YAOURT AROMATISES X4	2.90€	5.50	1	1301	24/05/2025 14:47:37	28779
24/05/2025 16:47:58	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1301	24/05/2025 14:47:37	28778
24/05/2025 16:09:58	Magasin Noyal 35	237	237 OEUF6 X12	5.40€	5.50	1	1300	24/05/2025 14:09:48	28770
24/05/2025 15:57:30	Magasin Noyal 35	220	220 COOKIE CHOCOLAT NOIR	3.00€	5.50	1	1299	24/05/2025 13:57:11	28768
24/05/2025 15:42:20	Magasin Noyal 35	122	122 PATE DE CAMPAGNE	2.50€	5.50	1	1298	24/05/2025 13:41:50	28767
24/05/2025 15:42:20	Magasin Noyal 35	162	162 RIZ AU LAIT	3.95€	5.50	1	1298	24/05/2025 13:41:50	28766
24/05/2025 14:44:03	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1297	24/05/2025 12:43:24	28765
24/05/2025 14:44:03	Magasin Noyal 35	212	212 TORSADE NATURE	1.80€	5.50	1	1297	24/05/2025 12:43:24	28764
24/05/2025 13:14:28	Magasin Noyal 35	221	221 COOKIE CHOCOLAT BLANC / FRAMBOISE	3.00€	5.50	1	1283	24/05/2025 11:33:50	28763
24/05/2025 13:14:28	Magasin Noyal 35	227	227 BOCAL PARMENTIER	6.45€	5.50	1	1283	24/05/2025 11:33:50	28762
24/05/2025 12:03:15	Magasin Noyal 35	229	229 FRAISES 250G	4.60€	5.50	1	1282	24/05/2025 10:02:59	28755
24/05/2025 12:02:09	Magasin Noyal 35	140	140 BACON	4.50€	5.50	2	1281	24/05/2025 10:01:12	28753
24/05/2025 12:02:09	Magasin Noyal 35	172	172 YAOURT AROMATISES X4	2.90€	5.50	2	1281	24/05/2025 10:01:12	28752
24/05/2025 12:02:09	Magasin Noyal 35	184	184 CROTTIN CHEVRE CENDRE	3.70€	5.50	2	1281	24/05/2025 10:01:12	28751
24/05/2025 11:20:34	Magasin Noyal 35	193	193 FILET DE POULET X2	8.20€	5.50	2	1280	24/05/2025 09:20:09	28739
24/05/2025 11:20:34	Magasin Noyal 35	121	121 RILLETES	3.40€	5.50	2	1280	24/05/2025 09:20:09	28738

OK

Hexatronic SAS

Début de liste

Login handling forgotten passwords

Users rights management

CRUD with filtering

LISTS with joins

Folded menus

Modal windows

Breadcrumb

Basic theming

Administration S. Rivière

Précédent

Suivant

Actualiser

Filtrer

Défiltrer

Voir

Export ventes

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24/05/2025 22:25:37	Magasin Noyal 35	237	237 OEUF X12	5.40€	5.50	1	1328	24/05/2025 20:55:24	28832
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24/05/2025 18:57:10	Magasin Noyal 35	237	237 OEUF X12	5.40€	5.50	1	1313	24/05/2025 16:56:59	28821
24/05/2025 18:49:24	Magasin Noyal 35	221	221 PATE DE CAMPAGNE	3.00€	5.50	1	1312	24/05/2025 16:48:37	28820
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24/05/2025 18:19:55	Magasin Noyal 35	123	123 PATE DE CAMPAGNE	4.00€	5.50	1	1309	24/05/2025 16:19:30	28799
24/05/2025 18:19:55	Magasin Noyal 35	231	231 PAIN DE CAMPAGNE	4.60€	5.50	1	1309	24/05/2025 16:19:30	28798
24/05/2025 18:17:43	Magasin Noyal 35	234	234 OEUF X6	2.70€	5.50	1	1308	24/05/2025 16:17:34	28797
24/05/2025 18:04:33	Magasin Noyal 35	231	231 PAIN DE CAMPAGNE	4.60€	5.50	1	1307	24/05/2025 16:04:20	28793
24/05/2025 18:02:31	Magasin Noyal 35	170	170 YAOURT AROMATISES X4	2.60€	5.50	1	1306	24/05/2025 16:02:10	28792
24/05/2025 18:02:31	Magasin Noyal 35	165	165 RIZ AU LAIT	4.90€	5.50	1	1306	24/05/2025 16:02:10	28791
24/05/2025 17:38:45	Magasin Noyal 35	150	150 GNAT gcc v14.2.0	8.95€	5.50	1	1305	24/05/2025 15:38:10	28787
24/05/2025 17:38:45	Magasin Noyal 35	190	190 FILET DE POULET X2	7.50€	5.50	1	1305	24/05/2025 15:38:10	28786
24/05/2025 17:38:45	Magasin Noyal 35	141	141 BACON	5.95€	5.50	1	1305	24/05/2025 15:38:10	28785
24/05/2025 17:25:43	Magasin Noyal 35	164	164 RIZ AU LAIT	4.80€	5.50	1	1304	24/05/2025 15:25:24	28783
24/05/2025 17:25:43	Magasin Noyal 35	164	164 RIZ AU LAIT	4.80€	5.50	1	1304	24/05/2025 15:25:24	28782
24/05/2025 17:12:52	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1303	24/05/2025 15:12:37	28781
24/05/2025 16:59:20	Magasin Noyal 35	221	221 COOKIE CHOCOLAT BLANC / FRAMBOISE	3.00€	5.50	1	1302	24/05/2025 14:58:59	28780
24/05/2025 16:47:58	Magasin Noyal 35	173	173 YAOURT AROMATISES X4	2.90€	5.50	1	1301	24/05/2025 14:47:37	28779
24/05/2025 16:47:58	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1301	24/05/2025 14:47:37	28778
24/05/2025 16:09:58	Magasin Noyal 35	237	237 OEUF X12	5.40€	5.50	1	1300	24/05/2025 14:09:48	28770
24/05/2025 15:57:30	Magasin Noyal 35	220	220 COOKIE CHOCOLAT NOIR	3.00€	5.50	1	1299	24/05/2025 13:57:11	28768
24/05/2025 15:42:20	Magasin Noyal 35	122	122 PATE DE CAMPAGNE	2.50€	5.50	1	1298	24/05/2025 13:41:50	28767
24/05/2025 15:42:20	Magasin Noyal 35	162	162 RIZ AU LAIT	3.95€	5.50	1	1298	24/05/2025 13:41:50	28766
24/05/2025 14:44:03	Magasin Noyal 35	170	170 YAOURT NATURE X4	2.60€	5.50	1	1297	24/05/2025 12:43:24	28765
24/05/2025 14:44:03	Magasin Noyal 35	212	212 TORSADE NATURE	1.80€	5.50	1	1297	24/05/2025 12:43:24	28764
24/05/2025 13:14:28	Magasin Noyal 35	221	221 COOKIE CHOCOLAT BLANC / FRAMBOISE	3.00€	5.50	1	1283	24/05/2025 11:33:50	28763
24/05/2025 13:14:28	Magasin Noyal 35	227	227 BOCAL PARMENTIER	6.45€	5.50	1	1283	24/05/2025 11:33:50	28762
24/05/2025 12:03:15	Magasin Noyal 35	229	229 FRAISES 250G	4.60€	5.50	1	1282	24/05/2025 10:02:59	28755
24/05/2025 12:02:09	Magasin Noyal 35	140	140 BACON	4.50€	5.50	2	1281	24/05/2025 10:01:12	28753
24/05/2025 12:02:09	Magasin Noyal 35	172	172 YAOURT AROMATISES X4	2.90€	5.50	2	1281	24/05/2025 10:01:12	28752
24/05/2025 12:02:09	Magasin Noyal 35	184	184 CROTTIN CHEVRE CENDRE	3.70€	5.50	2	1281	24/05/2025 10:01:12	28751
24/05/2025 11:20:34	Magasin Noyal 35	193	193 FILET DE POULET X2	8.20€	5.50	2	1280	24/05/2025 09:20:09	28739
24/05/2025 11:20:34	Magasin Noyal 35	121	121 RILLETES	3.40€	5.50	2	1280	24/05/2025 09:20:09	28738

Hexatronic SAS

Début de liste

Integrated well with standard tools as Xen, GNU/Linux Debian, Nginx, MySQL, SQLite, cURL, SSH, etc.

On-the-fly DB updates new tables, indexes, columns, row fillings

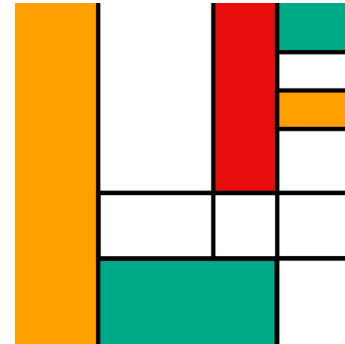
Fast deployment

More productive



- v20 - servers cluster manager
- v22 - redefining web development
- v25 - our final frontier, named...

LibreFrame



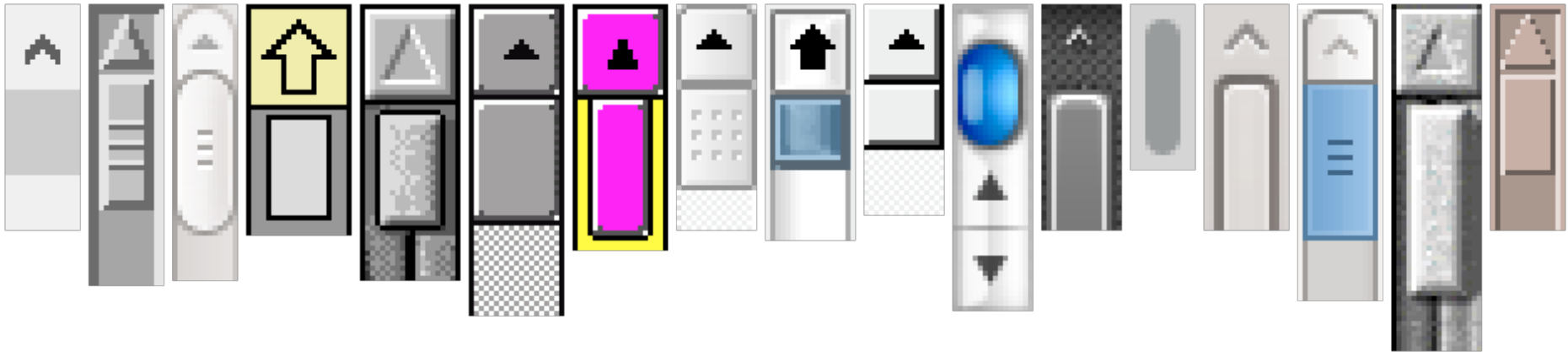
A client-server GUI system

The server hosts the entire application logic

The clients are user-facing GUI windows

Uses a server-agnostic protocol for communication

Beauty is in the eye of the beholder



Counter



CLI

Counter: 0

Increment

Web

Counter: 0

Increment



```
1  Counter : Integer := 0;
2
3  procedure Redraw_Window (Frame : in out UI.Container) is
4  begin
5      Frame.Text ("Counter:" & Counter'Image);
6
7      if Frame.Button ("Increment") then
8          Counter := Counter + 1;
9      end if;
10 end Redraw_Window;
```

1. Call Redraw_Window to generate the current UI state.
 2. Compute the difference between new and previous widget trees.
 3. Send UI updates to the corresponding client window.
 4. Repeat the above steps for all connected client windows.
 5. Wait for an incoming event.
- (Loop and repeat the process)

```
1  type Views is (Login, Main, Settings);
2  package UI is new Libre_Frame.UI (Views => Views);
3  function Redraw_Window
4      (Current_View : in Views; Frame : in out UI.Container) return Views is
5  begin
6      case Current_View is
7          when Login =>
8              if Frame.Button ("I forgot my password") then
9                  return Main;
10             end if;
11             when Main =>
12                 Frame.Text ("Welcome, forgetful one.");
13             when Settings => null;
14         end case;
15         return Current_View;
16     end Redraw_Window;
```

Server

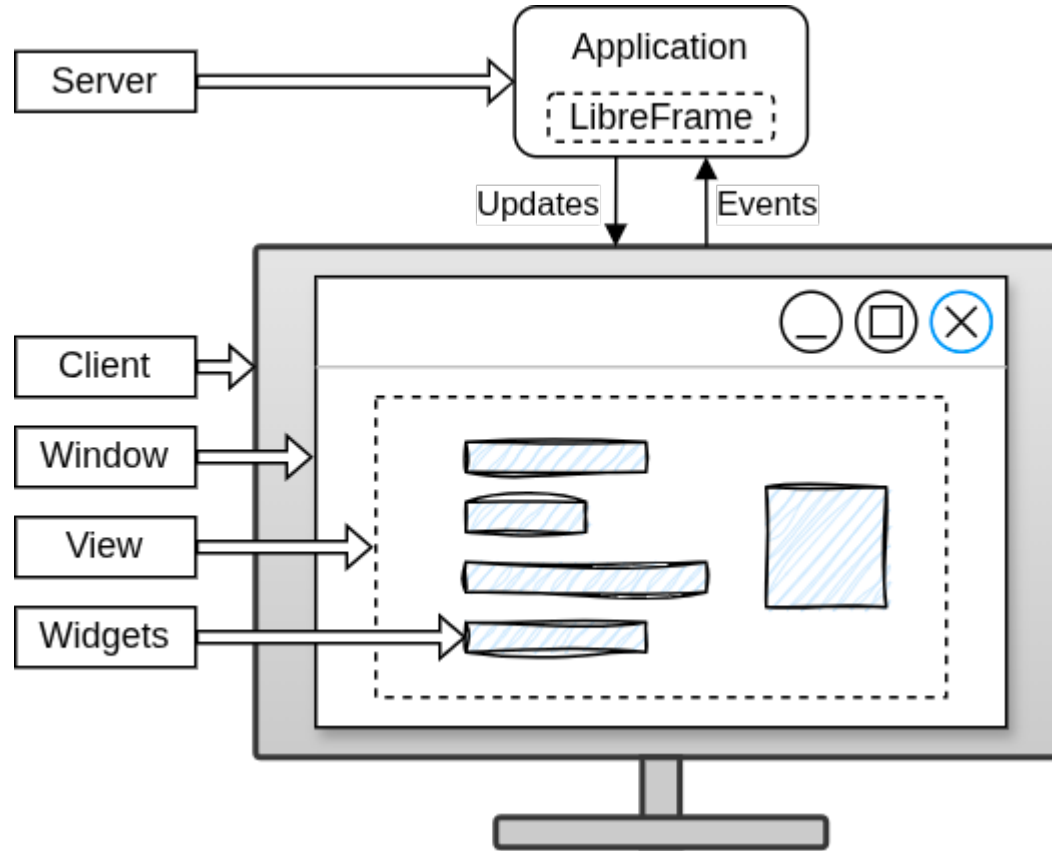
Client

Window

View

Widgets

Layers & state life cycle (diagram)





```
function Redraw_Window
(Current_View : in      Views;
 Frame       : in out UI.Container;
 Client      : in out Client_Data;
 Window      : in out Window_Data) return Views
```

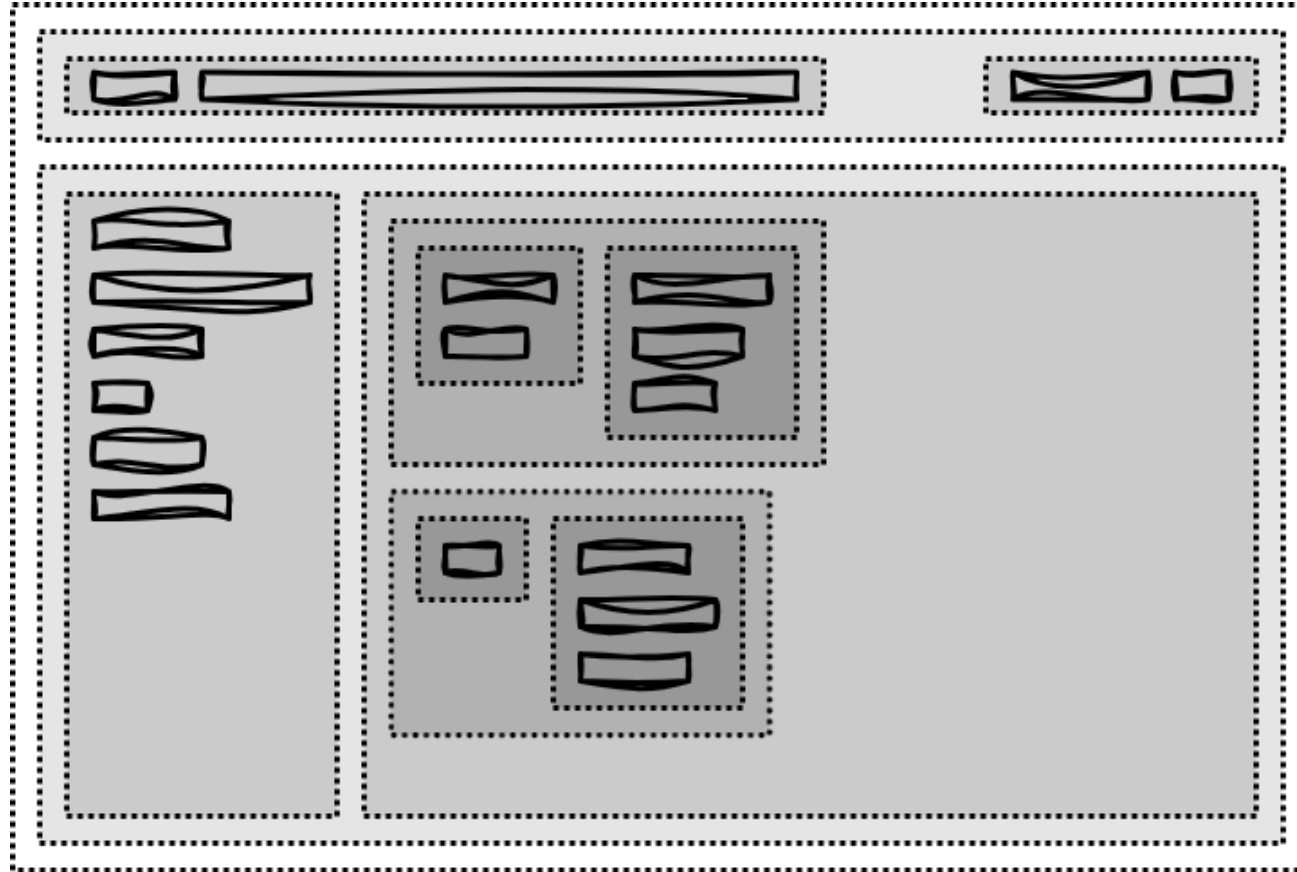
Widgets are arranged using layout containers

Currently, only a box container is supported

Inspired by CSS flexbox, but with a simpler, more limited design

A separator widget is available to create spacing between widgets

Layout (diagram)



Next improvements

API

Widgets

Clients

Server

Performance

Reliability

Text mode SDL mode Customized themes More GP
widgets SCADA and industrial Widgets Geographic
widget Internationalization Localization User
generated help system WS layer rewriting SQL layer
refactoring new bindings to PostgreSQL and Firebird
Make LibreFrame portable on all Linux, *BSD, MacOS and
Windows systems

Our todo list is opened this Workshop is an opportunity to
gather feedback to improve LibreFrame

Acknowledgements



Countess of Computing



The KISS inventor



The Architect

Adacore and GCC People,
David Botton, Dmitry Kazakov,
Pascal Pignard, Gauthier de
Montmollin.

Fabien Chouteau, Olivier
Henley, Jean-Pierre Rosen,
Fernando Oleo Blanco, Dirk
Craeynest



Théodore



Arthur



Lounès

Thank you all

for listening

See you at the
next FOSDEM
for the first release of
LibreFrame

A Kiss Ada GUI - Xavier Petit & Stéphane Rivière





Sowebio company background



Sowebio

main company

Web sites

SAAS

Graphics

Marketing

Printing

Sowneo

tech subsidiary

Facilities management

Server clustering

Cloud escaping

Software development

Electronic design

Xavier Petit

Backend developer

Automation

Optimization

Infra. management

Teaching software

Stéphane Rivière

Electronic engineer

Software developer

Comms specialist

On-board military apps

Business-critical apps

Choose the right language for the right project! Can the obvious be a lie?

Should a well-designed language be able to do everything?

After several years of in-house and customer development, it seems that this is true.



Simplicity is the ultimate sophistication.
Leonardo da Vinci

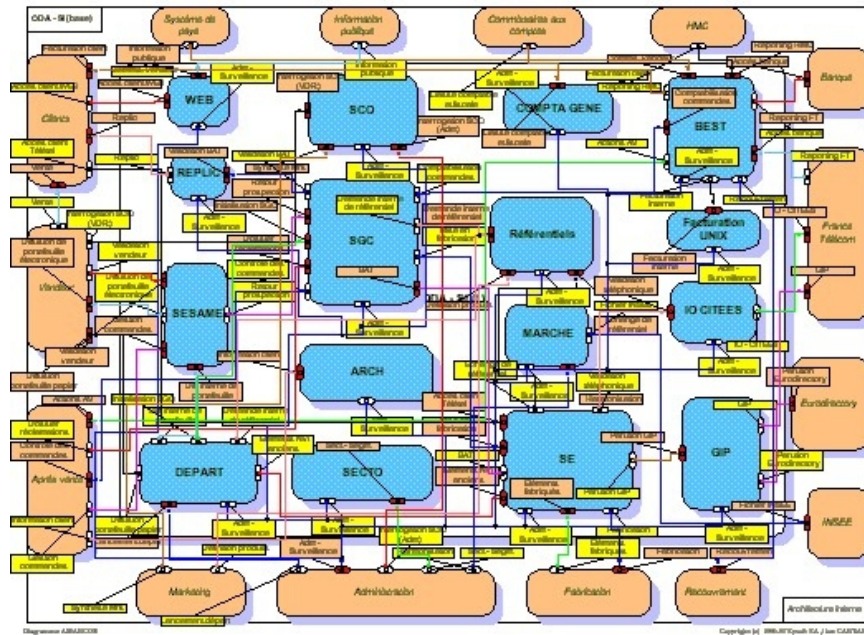
It seems that perfection is reached not when there is nothing left to add, but when there is nothing left to take away.
Antoine de Saint-Exupéry



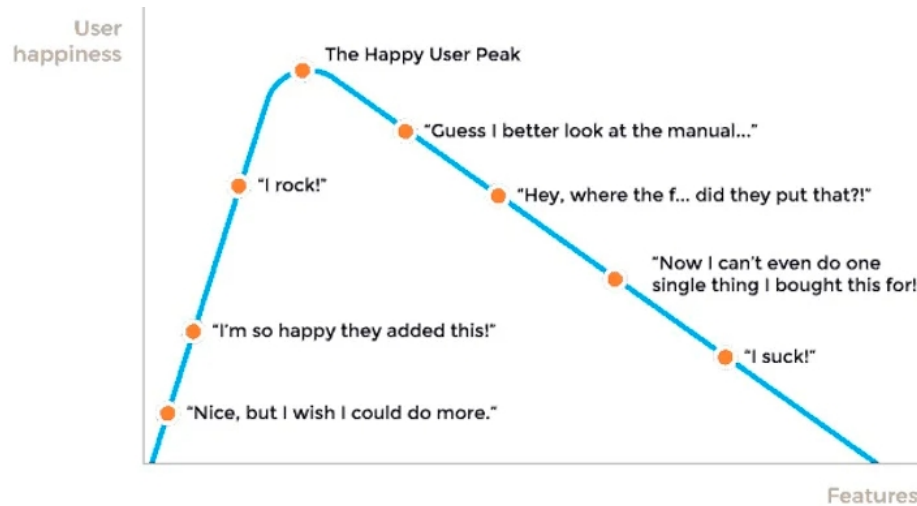
Make everything as simple as possible, but not simpler.
Albert Einstein

Craftsmen laboriously make things that work.

“Geniuses” make incomprehensible stuff that doesn't work well, but works just well enough for us to take a long time to admit that, in fact, “it was crap”.



Today's development environments have become bloated. They can do anything.



But
at
what
cost?

Image source : <https://www.plutora.com/blog/feature-creep-problem>

Current GUI developments are not productive

Too many systems, too many terminals, too many “changing languages”, too many disparate screen sizes, too many keyboards, mice or fingers as inputs devices.

Datas schemas should be in the code

Screens should be in the code

Everything should be in the code

A code using one language

A language for one framework

v20 - servers cluster manager

Genesisix - A servers cluster manager.
Copyright [C] Sowebio SARL 2020-2025, according to GPLv3.
gnx v3.5 - **v20** v0.11 - build 2024-09-14 11:59:01

Usage: gnx class command [value] [options]

classes
 app Application management
 cluster Cluster management
 db Genesisix database utilities
 domain Domain name management
 group Group of instances management
 info General information
 instance Instance management
 ip Ip management
 node Nodes management
 owner Owner management
 remote Remote functions
 service Service functions
 user User management

--address=IP ADDRESS IP Address
--api-ak=APPKEY Api AK [Application Key]
--api-as=APPSECRET Api AS [Application Secret]
--api-ck=CONSUMERKEY Api CK [Consumer Key]
--api-ep=ENDPOINT Api End Point
--app=1... 400 Application number
--backup-files=NULL, 1... 200 Backup instance for files
--backup-images=NULL, 1... 200 Backup instance for instances images
--backup-server=DOMAINNAME Backup server [Domain name]
--cidr=CIDRPREFIX CIDR Prefix /32 to /24
--comment=TEXT Comment
--country=CIDRPREFIX ISO 3166-2 Country code [fr, de, etc.]
--cpu-list=2...CPUMAX Logical CPU used
--cpu=1... 63 Total number of CPUs on node, starting at 0
--credential-list=SEE MANUAL Credentials list
--db-name=TEXT App database name
--db-login=LOGIN App database login
--db-password=PASSWORD App database password
--disk=3... 8192 GB Disk size
--domain=DOMAIN.TLD Cluster domain

.../...

v22 - redefining web development

No JS/HTML/CSS hell

Defining block and sub-blocks of widgets

Fitting themselves the responsive way

From the 43" 4K workstation to the smallest 5" smartphone

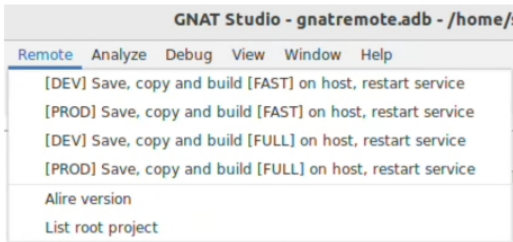
v22 - A first attempt In Real Life

A general-purpose framework ready for all types of development

“Dogfooding” to improve both v22 framework and applications

Several applications developed in-house

Our latest software is a management application for hundreds of vending machines



Fast Deploying with GNAT Remote

Gnatremote --action=dev_save_copy_build_full_restart

GnatRemote - Gnatstudio remote utility
Copyright [C] Sowebio SARL 2023-2025
gnatremote v0.9 - v22 v0.6 - build 2025-02-09 14:16:01

20250209-182253.588 - INIT - MSG - gnatremote.Init.App > Configuration file ../gnatremote.cfg loaded

20250209-182253.588 - ACTION - --- - INPUT PARAMETERS -----
20250209-182253.591 - ACTION - MSG - Action required: dev_save_copy_build_full_restart

20250209-182253.591 - ACTION - MSG - Local project directory:

/home/sr/Sowebio/informatique/dev/prv/hex01

20250209-182253.591 - ACTION - MSG - Local shared directory:

/home/sr/Sowebio/informatique/dev/prv/hex01/hex01

20250209-182253.592 - ACTION - MSG - Local program directory:

/home/sr/Sowebio/informatique/dev/prv/hex01/hex01_net

20250209-182253.592 - ACTION - MSG - Remote build directory:

root@i188c1.*****.*** /root/build/hex01

20250209-182253.592 - ACTION - MSG - Remote run dir directory: root@i188c1.*****.*** /opt/hex01

20250209-182253.592 - ACTION - MSG - Remote run dev directory: root@i188c1.*****.*** /opt/hex01/dev

20250209-182253.593 - ACTION - MSG - Remote run prod directory: root@i188c1.*****.*** /opt/hex01/prod

Fast deploying with GNAT Remote

```
20250209-182253.593 - ACTION - --- - GNATREMOTE.COPY_SHARED > COPY COMMON PROJECT SOURCES
20250209-182253.593 - ACTION - MSG - Net.Rsync > Excluding: .*
20250209-182253.594 - ACTION - MSG - Net.Rsync > Excluding: prg
20250209-182253.594 - ACTION - MSG - Net.Rsync > Excluding: obj
sent 10.198 bytes received 27 bytes 2.921,43 bytes/sec
total size is 13.522.374 speedup is 1.322,48
20250209-182258.424 - ACTION - MSG - Net.Rsync > Copy: ../hex01/hex01/ to /root/build/hex01/hex01 successful

20250209-182258.425 - ACTION - --- - GNATREMOTE.COPY_SOURCES > COPY BUILD FILES AND PROGRAM SOURCES
20250209-182258.425 - ACTION - MSG - Net.Rsync > Excluding: .*
20250209-182258.425 - ACTION - MSG - Net.Rsync > Excluding: prg
20250209-182258.426 - ACTION - MSG - Net.Rsync > Excluding: obj
20250209-182259.611 - ACTION - MSG - Net.Rsync > Directory_Rx exists, no need to create it
sending incremental file list
sent 22.664 bytes received 2.657 bytes 7.234,57 bytes/sec
total size is 223.371 speedup is 8,82
20250209-182302.568 - ACTION - MSG - Net.Rsync > Copy: ../hex01_net/ to /root/build/hex01/hex01_net successful

20250209-182302.569 - ACTION - --- - GNATREMOTE.BUILD > HEX01_NET -----
20250209-182304.605 - ACTION - MSG - /root/build/hex01/hex01_net/obj successfully deleted
20250209-182415.556 - ACTION - MSG - Remote command cd /root/build/hex01/hex01_net ; alr build ; ls -l ./prg on
root@i188c1.genesix.org successful
Note: Building hex01_net=0.1.0-dev/hex01_net.gpr...
```

Fast deploying with GNAT Remote

```
Setup
[mkdir]      object directory for project Hex01_Net
Compile
[Ada]       hex01_net.adb
[Ada]       hex01_def.adb
[Ada]       v22.adb
.../...
[Ada]       v22-gui-footer.adb
[Ada]       v22-gui-header.adb
[Ada]       v22-gui-main_menu.adb
[Ada]       v22-gui-breadcrumb.adb
[Ada]       v22-gui-user_menu.adb
Bind
.../...
[link]      hex01_net.adb
Success: Build finished successfully in 67.66 seconds.
total 21828

20250209-182415.556 - ACTION - --- - GNATREMOTE.RESTART > HEX01_NET -----
20250209-182418.734 - ACTION - MSG - Remote command systemctl stop hex01_net_dev on root@i188c1.*** successful
20250209-182419.925 - ACTION - MSG - Remote command cp --force /root/build/hex01/hex01_net/prg/hex01_net
/opt/hex01/dev/hex01_net_dev on root@i188c1.*** successful
20250209-182420.607 - ACTION - MSG - Remote command systemctl start hex01_net_dev on root@i188c1.*** successful
20250209-182420.607 - ACTION - MSG - Action successful

20250209-182421.721 - EXIT   - MSG - Total execution time: 0h01m28s
```

v22 - Modular & Ready for action

Cfg Configuration files **Fls** Files and folders **Gui** Gnoga User Interface **Gui.Crud** CRUD management **Msg** Logging **Net** Network SSH API **Pdf** Pdf creation **Prg** Program related **Sql** SQLite & MySQL **Sys** System related **Tio** Text console and text files **Uxf** UTF-8 UXStrings files **Uxs** UTF-8 UXStrings extensions

v22 - A well documented environment



Ada Development Environment on Linux

< 100 pages about building an Ada Linux setup with Alire and GNAT Remote fast deploying tool



v22 Ada Framework User Manual



Sowebio SARL
15, rue du Temple
17310 - St Pierre d'Oleron - France
Capital: 15 000 EUR - SIRET: 844 040 046 00019 - RCS La Rochelle - AFE 62012 - TVA FR00844060046

Ada Development Environment on Linux		ed. 88 of 2025/05/23 page 3 of 88
Sowebio SARL 15, rue du Temple 17310 - St Pierre d'Oleron - France Capital: 15 000 EUR - SIRET: 844 040 046 00019 - RCS La Rochelle - AFE 62012 - TVA FR00844060046		

300 pages about our GP framework with responsive GUI building by blocks >



Sowebio SARL
15, rue du Temple
17310 - St Pierre d'Oleron - France
Capital: 15 000 EUR - SIRET: 844 040 046 00019 - RCS La Rochelle - AFE 62012 - TVA FR00844060046

v22 Ada Framework User Manual		ed. 88 of 2025/05/23 page 3 of 88
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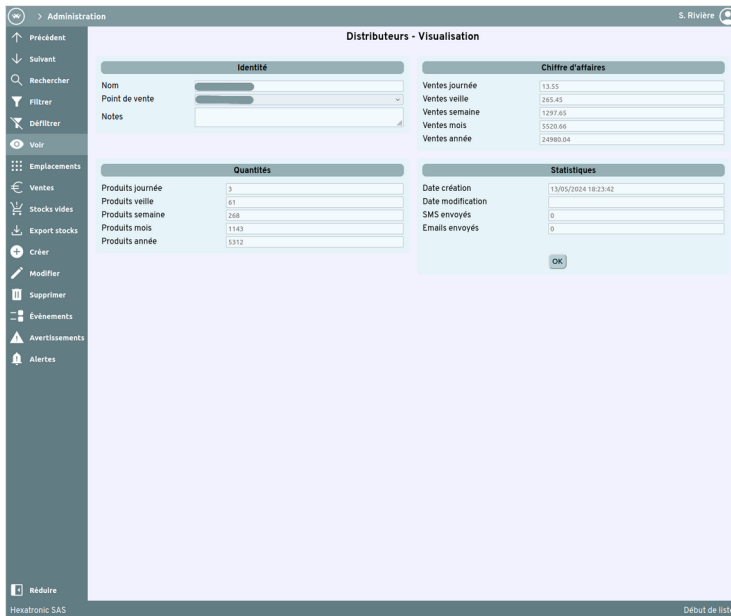
A vending machine application

Telemetry server with in-house VPN / LTE network (2K SLOC)

Web server with responsive interface (4K SLOC)

Backgrounds tasks for emails and sms alerting, sales consolidation, logs cleaning, backups, etc. (1K SLOC)

3 Linux services - 7K SLOC (plus v22 9K SLOC)



Administration S. Rivière

Distributeurs - Visualisation

Identité

Nom

Point de vente

Notes

Chiffre d'affaires

Ventes journée 13.55

Ventes veille 265.45

Ventes semaine 1297.65

Ventes mois 5520.66

Ventes année 24980.04

Quantités

Produits journée 3

Produits veille 61

Produits semaine 268

Produits mois 1143

Produits année 5312

Statistiques

Date création 13/05/2024 18:23:42

Date modification

SMS envoyés 0

Emails envoyés 0

OK

Hexatronic SAS Début de liste

< Station view

From 43" 4K to
the smallest 5"
smartphones

Phone view >



Administration S. Rivière

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Emails envoyés 0

OK

Hexatronic SAS Début de liste



v22 apps - Extended GUI functions



Date	Produit	Quantité	Prix	Total	Statut	Commentaire
25/05/2025 10:40:08	Magasin Noyal 35 210 213 PAIN DE CAMPAGNE	3.40K	5.50	1	1331	25/05/2025 08:39:27 28845
25/05/2025 10:40:08	Magasin Noyal 35 122 122 PATE DE CAMPAGNE	2.50K	5.50	1	1331	25/05/2025 08:39:27 28845
25/05/2025 10:40:08	Magasin Noyal 35 121 121 RILLETES	3.40K	5.50	1	1331	25/05/2025 08:39:27 28844
25/05/2025 09:35:32	Magasin Noyal 35 151 151 SAUCISSE X4	6.90K	5.50	1	1330	25/05/2025 07:35:22 28843
25/05/2025 08:47:34	Magasin Noyal 35 234 234 OEUFS X6	2.70K	5.50	1	1329	25/05/2025 06:47:34 28842
25/05/2025 08:47:34	Magasin Noyal 35 161 161 SVR	3.90K	5.50	1	1329	25/05/2025 06:47:34 28841
24/05/2025 22:15:37	Magasin Noyal 35 237 237 OEUFS X12	5.40K	5.50	1	1328	24/05/2025 20:15:24 28832
24/05/2025 19:46:56	Magasin Noyal 35 230 230 PAIN LE ZEX MULTI GRAINES	3.95K	5.50	1	1315	24/05/2025 17:46:46 28827
24/05/2025 19:19:22	Magasin Noyal 35 230 230 PAIN LE ZEX MULTI GRAINES	3.95K	5.50	1	1314	24/05/2025 17:19:09 28822
24/05/2025 18:57:10	Magasin Noyal 35 237 237 OEUFS X12	5.40K	5.50	1	1313	24/05/2025 16:56:59 28821
24/05/2025 18:49:24	Magasin Noyal 35 221 221	3.00K	5.50	1	1312	24/05/2025 16:48:37 28820
24/05/2025 18:49:24	Magasin Noyal 35 211 211	3.40K	5.50	1	1312	24/05/2025 16:48:37 28819
24/05/2025 18:49:24	Magasin Noyal 35 171 171	2.90K	5.50	1	1312	24/05/2025 16:48:37 28818
24/05/2025 18:49:24	Magasin Noyal 35 165 165	4.90K	5.50	1	1312	24/05/2025 16:48:37 28817
24/05/2025 18:49:24	Magasin Noyal 35 195 195	4.50K	5.50	1	1312	24/05/2025 16:48:37 28816
24/05/2025 18:38:22	Magasin Noyal 35 233 233	2.70K	5.50	1	1311	24/05/2025 16:37:58 28805
24/05/2025 18:38:22	Magasin Noyal 35 140 140	4.50K	5.50	1	1311	24/05/2025 16:37:58 28804
24/05/2025 18:34:28	Magasin Noyal 35 229 229	4.60K	5.50	1	1310	24/05/2025 16:34:13 28803
24/05/2025 18:19:55	Magasin Noyal 35 123 123	4.00K	5.50	1	1309	24/05/2025 16:19:30 28799
24/05/2025 18:19:55	Magasin Noyal 35 231 231	4.60K	5.50	1	1309	24/05/2025 16:19:30 28798
24/05/2025 18:17:43	Magasin Noyal 35 234 234	2.70K	5.50	1	1308	24/05/2025 16:17:34 28797
24/05/2025 18:04:33	Magasin Noyal 35 231 231	4.60K	5.50	1	1307	24/05/2025 16:04:20 28793
24/05/2025 18:02:31	Magasin Noyal 35 170 170	2.60K	5.50	1	1306	24/05/2025 16:02:10 28792
24/05/2025 18:02:31	Magasin Noyal 35 165 165	4.90K	5.50	1	1306	24/05/2025 16:02:10 28791
24/05/2025 17:38:45	Magasin Noyal 35 150 150	6.95K	5.50	1	1305	24/05/2025 15:38:10 28787
24/05/2025 17:38:45	Magasin Noyal 35 190 190	7.50K	5.50	1	1305	24/05/2025 15:38:10 28786
24/05/2025 17:38:45	Magasin Noyal 35 141 141	5.95K	5.50	1	1305	24/05/2025 15:38:10 28785
24/05/2025 17:25:43	Magasin Noyal 35 164 164	4.80K	5.50	1	1304	24/05/2025 15:25:24 28783
24/05/2025 17:25:43	Magasin Noyal 35 164 164	4.80K	5.50	1	1304	24/05/2025 15:25:24 28782
24/05/2025 17:12:52	Magasin Noyal 35 170 170	2.60K	5.50	1	1303	24/05/2025 15:12:37 28781
24/05/2025 16:59:20	Magasin Noyal 35 221 221	3.00K	5.50	1	1302	24/05/2025 14:58:59 28780
24/05/2025 16:47:58	Magasin Noyal 35 173 173	2.90K	5.50	1	1301	24/05/2025 14:47:37 28779
24/05/2025 16:47:58	Magasin Noyal 35 170 170	2.60K	5.50	1	1301	24/05/2025 14:47:37 28778
24/05/2025 16:09:58	Magasin Noyal 35 237 237	5.40K	5.50	1	1300	24/05/2025 14:09:48 28770
24/05/2025 15:57:30	Magasin Noyal 35 220 220	3.00K	5.50	1	1299	24/05/2025 13:57:11 28768
24/05/2025 15:42:20	Magasin Noyal 35 122 122	2.50K	5.50	1	1298	24/05/2025 13:41:50 28767
24/05/2025 15:42:20	Magasin Noyal 35 162 162	3.95K	5.50	1	1298	24/05/2025 13:41:50 28766
24/05/2025 14:44:03	Magasin Noyal 35 170 170	2.60K	5.50	1	1297	24/05/2025 12:43:24 28765
24/05/2025 14:44:03	Magasin Noyal 35 212 212	1.80K	5.50	1	1297	24/05/2025 12:43:24 28764
24/05/2025 13:44:28	Magasin Noyal 35 221 221	3.00K	5.50	1	1283	24/05/2025 11:35:50 28763
24/05/2025 13:44:28	Magasin Noyal 35 227 227	4.45K	5.50	1	1283	24/05/2025 11:35:50 28762
24/05/2025 12:03:35	Magasin Noyal 35 229 229	4.60K	5.50	1	1282	24/05/2025 10:02:59 28755
24/05/2025 12:02:09	Magasin Noyal 35 140 140	4.50K	5.50	2	1281	24/05/2025 10:01:12 28753
24/05/2025 12:02:09	Magasin Noyal 35 172 172	2.90K	5.50	2	1281	24/05/2025 10:01:12 28752
24/05/2025 12:02:09	Magasin Noyal 35 184 184	3.70K	5.50	2	1281	24/05/2025 10:01:12 28751
24/05/2025 11:20:34	Magasin Noyal 35 193 193	8.20K	5.50	2	1280	24/05/2025 09:20:09 28739
24/05/2025 11:20:34	Magasin Noyal 35 121 121	3.40K	5.50	2	1280	24/05/2025 09:20:09 28738

Login handling forgotten passwords

Users rights management

CRUD with filtering

LISTS with joins

Folded menus

Modal windows

Breadcrumb

Basic theming



v22 apps - Integrates well and updates easily



Administration	S. Riviere
Président	
Suivre	
Actualiser	
Filtrer	
Defiler	
Voir	
Expert ventes	

Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne
Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne	Colonne
25/05/2025 10:40:08	Magasin Noyal 35	210	213 PAIN DE CAMPAGNE	3.40K	5.50	1	1331	25/05/2025 08:39:27	28845
25/05/2025 10:40:08	Magasin Noyal 35	122	122 PATE DE CAMPAGNE	2.50K	5.50	1	1331	25/05/2025 08:39:27	28845
25/05/2025 10:40:08	Magasin Noyal 35	121	121 RILLETES	3.40K	5.50	1	1331	25/05/2025 08:39:27	28844
25/05/2025 09:35:32	Magasin Noyal 35	151	151 SAUCISSE X4	6.90K	5.50	1	1330	25/05/2025 07:35:22	28843
25/05/2025 08:47:34	Magasin Noyal 35	234	234 OEUFS X6	2.70K	5.50	1	1329	25/05/2025 06:47:34	28842
25/05/2025 08:47:34	Magasin Noyal 35	161	161 SVR	3.90K	5.50	1	1329	25/05/2025 06:47:34	28841
24/05/2025 22:35:37	Magasin Noyal 35	237	237 OEUFS X12	5.40K	5.50	1	1328	24/05/2025 20:35:24	28832
24/05/2025 19:46:56	Magasin Noyal 35	230	230 PAIN LE ZEX MULTI GRAINES	3.95K	5.50	1	1315	24/05/2025 17:46:46	28827
24/05/2025 19:19:22	Magasin Noyal 35	230	230 PAIN LE ZEX MULTI GRAINES	3.95K	5.50	1	1314	24/05/2025 17:19:09	28822
24/05/2025 18:57:10	Magasin Noyal 35	237	237 OEUFS X12	5.40K	5.50	1	1313	24/05/2025 16:56:59	28821
24/05/2025 18:49:24	Magasin Noyal 35	221	221	3.00K	5.50	1	1312	24/05/2025 16:48:37	28820
24/05/2025 18:49:24	Magasin Noyal 35	211	211	3.40K	5.50	1	1312	24/05/2025 16:48:37	28819
24/05/2025 18:49:24	Magasin Noyal 35	171	171	2.90K	5.50	1	1312	24/05/2025 16:48:37	28818
24/05/2025 18:49:24	Magasin Noyal 35	165	165	4.90K	5.50	1	1312	24/05/2025 16:48:37	28817
24/05/2025 18:49:24	Magasin Noyal 35	195	195	4.50K	5.50	1	1312	24/05/2025 16:48:37	28816
24/05/2025 18:38:22	Magasin Noyal 35	233	233	2.70K	5.50	1	1311	24/05/2025 16:37:58	28805
24/05/2025 18:38:22	Magasin Noyal 35	140	140	4.50K	5.50	1	1311	24/05/2025 16:37:58	28804
24/05/2025 18:34:28	Magasin Noyal 35	229	229	4.60K	5.50	1	1310	24/05/2025 16:34:13	28803
24/05/2025 18:19:55	Magasin Noyal 35	123	123	4.00K	5.50	1	1309	24/05/2025 16:19:30	28799
24/05/2025 18:19:55	Magasin Noyal 35	231	231	4.60K	5.50	1	1309	24/05/2025 16:19:30	28798
24/05/2025 18:17:43	Magasin Noyal 35	234	234	2.70K	5.50	1	1308	24/05/2025 16:17:34	28797
24/05/2025 18:04:33	Magasin Noyal 35	231	231	4.60K	5.50	1	1307	24/05/2025 16:04:20	28793
24/05/2025 18:02:31	Magasin Noyal 35	170	170	2.60K	5.50	1	1306	24/05/2025 16:02:10	28792
24/05/2025 18:02:31	Magasin Noyal 35	165	165	4.90K	5.50	1	1306	24/05/2025 16:02:10	28791
24/05/2025 17:38:45	Magasin Noyal 35	150	150	6.95K	5.50	1	1305	24/05/2025 15:38:10	28787
24/05/2025 17:38:45	Magasin Noyal 35	190	190	7.50K	5.50	1	1305	24/05/2025 15:38:10	28786
24/05/2025 17:38:45	Magasin Noyal 35	141	141	5.95K	5.50	1	1305	24/05/2025 15:38:10	28785
24/05/2025 17:25:43	Magasin Noyal 35	164	164	4.80K	5.50	1	1304	24/05/2025 15:25:24	28783
24/05/2025 17:25:43	Magasin Noyal 35	164	164	4.80K	5.50	1	1304	24/05/2025 15:25:24	28782
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24/05/2025 16:47:58	Magasin Noyal 35	173	173	2.90K	5.50	1	1301	24/05/2025 14:47:37	28779
24/05/2025 16:47:58	Magasin Noyal 35	170	170	2.60K	5.50	1	1301	24/05/2025 14:47:37	28778
24/05/2025 16:09:58	Magasin Noyal 35	237	237	5.40K	5.50	1	1300	24/05/2025 14:09:48	28770
24/05/2025 15:57:30	Magasin Noyal 35	220	220	3.00K	5.50	1	1299	24/05/2025 13:57:11	28768
24/05/2025 15:42:20	Magasin Noyal 35	122	122	2.50K	5.50	1	1298	24/05/2025 13:45:50	28767
24/05/2025 15:42:20	Magasin Noyal 35	162	162	3.95K	5.50	1	1298	24/05/2025 13:45:50	28766
24/05/2025 14:44:03	Magasin Noyal 35	170	170	2.60K	5.50	1	1297	24/05/2025 12:43:24	28765
24/05/2025 14:44:03	Magasin Noyal 35	212	212	1.80K	5.50	1	1297	24/05/2025 12:43:24	28764
24/05/2025 13:44:28	Magasin Noyal 35	221	221	3.00K	5.50	1	1283	24/05/2025 11:35:50	28763
24/05/2025 13:44:28	Magasin Noyal 35	227	227	4.45K	5.50	1	1283	24/05/2025 11:35:50	28762
24/05/2025 12:03:35	Magasin Noyal 35	229	229	4.60K	5.50	1	1282	24/05/2025 10:02:59	28755
24/05/2025 12:02:09	Magasin Noyal 35	140	140	4.50K	5.50	2	1281	24/05/2025 10:01:12	28753
24/05/2025 12:02:09	Magasin Noyal 35	172	172	2.90K	5.50	2	1281	24/05/2025 10:01:12	28752
24/05/2025 12:02:09	Magasin Noyal 35	184	184	3.70K	5.50	2	1281	24/05/2025 10:01:12	28751
24/05/2025 11:20:34	Magasin Noyal 35	193	193	8.20K	5.50	2	1280	24/05/2025 09:20:09	28739
24/05/2025 11:20:34	Magasin Noyal 35	121	121	3.40K	5.50	2	1280	24/05/2025 09:20:09	28738

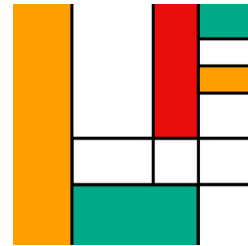
Integrated well with standard tools as Xen, GNU/Linux Debian, Nginx, MySQL, SQLite, cURL, SSH, etc.

On-the-fly DB updates new tables, indexes, columns, row fillings

Fast deployment
More productive

v20 - servers cluster manager
v22 - redefining web development
v25 - our final frontier, named...

LibreFrame



A client-server GUI system

The server hosts the entire application logic

The clients are user-facing GUI windows

Uses a server-agnostic protocol for communication

- A client-server GUI system: So what kind of UI is this? It's a client-server system.

-
- The server hosts the entire application logic: All the application code runs on the server, using the LibreFrame library.

This is called server-side scripting or rendering.

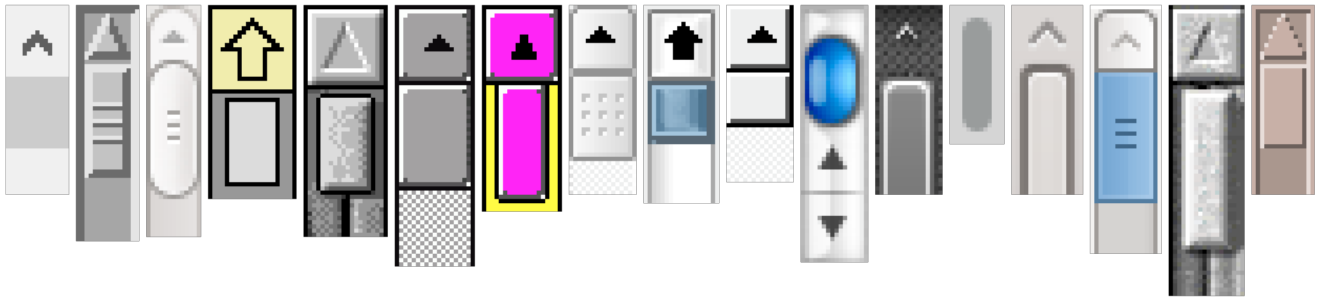
-
- The clients are user-facing GUI windows: The client is the app that the user sees.

It can be a GTK window, an SDL app, a terminal window, or even a web page on a smartphone. Think of it like a graphical terminal.

-
- Uses a server-agnostic protocol for communication: The server and clients use the same protocol to talk to each other.

The protocol is server-agnostic — it doesn't care what language or platform they use, as long as they follow the protocol.

Beauty is in the eye of the beholder



What's the best-looking scrollbar?

Everyone has their own opinion.

That's why in this system, the client controls the look and feel of widgets.

Widgets haven't changed much

Their functionality has stayed the same for decades.

What has changed is appearance and layout, especially with smartphones.

So why not let users choose?

The protocol works at the widget level.

This allows the client to fully customize the design.

My choice: User over Developer

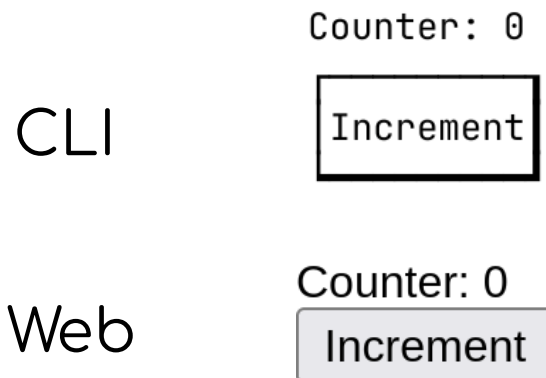
I believe the user should decide how apps look — not the developer.

Developers shouldn't control fonts, spacing, scrollbar visibility, etc.

The web has popularized developer-controlled design, but I'm against it.

Design differences create mental load

Switching between different designs can be tiring



- CLI client: The CLI here is emulated. It's a simple demo, nothing very exciting, it works the way you expect. You click the button and it changes from 0 to 1.

Click again, it overflows because computers are binary machines.

-
- Web client: The clients can run on the same machine as the server or on a distant computer. Talk is cheap, let's see the code for this example!

```
1 Counter : Integer := 0;
2
3 procedure Redraw_Window (Frame : in out UI.Container) is
4 begin
5     Frame.Text ("Counter:" & Counter'Image);
6
7     if Frame.Button ("Increment") then
8         Counter := Counter + 1;
9     end if;
10 end Redraw_Window;
```

Yes, that's a global variable on line 1

We're starting simple.

There are different ways to manage state — this example uses a global variable, but we'll see better options later.

The function on line 3 is what you give to the GUI library.

It normally takes more arguments — we've removed 3 here for simplicity.

The library (which acts as the server) calls this procedure often —

like whenever the user clicks a button.

On lines 5 and 7, we create a text label and a button.

You just call functions to create widgets.

Widgets are immediately added to the window.

The whole window is redrawn every time

Every time this function runs, the UI is recreated from scratch.

It's like drawing it for the first time, over and over.

Interactive widgets return a boolean

1. Call Redraw_Window to generate the current UI state.
 2. Compute the difference between new and previous widget trees.
 3. Send UI updates to the corresponding client window.
 4. Repeat the above steps for all connected client windows.
 5. Wait for an incoming event.
- (Loop and repeat the process)

Before anything else, the server and client do a handshake to agree on protocol and settings. Then, the event loop begins:

1. Call Redraw_Window to generate the current UI state: The server calls your Redraw_Window function. As we saw before, it rebuilds the full window from scratch.

-
2. Compute the difference between new and previous widget trees: The system compares the new widget tree with the previous one.

This diff step figures out which parts of the UI need to be updated.

-
3. Send UI updates to the corresponding client window: Only the necessary UI changes are sent to the client window.

-
4. Repeat the above steps for all connected client

```
1  type Views is (Login, Main, Settings);
2  package UI is new Libre_Frame.UI (Views => Views);
3  function Redraw_Window
4    (Current_View : in Views; Frame : in out UI.Container) return Views is
5  begin
6    case Current_View is
7      when Login =>
8        if Frame.Button ("I forgot my password") then
9          return Main;
10       end if;
11      when Main =>
12        Frame.Text ("Welcome, forgetful one.");
13      when Settings => null;
14    end case;
15    return Current_View;
16  end Redraw_Window;
```

Earlier, I said Redraw_Window was a procedure —
But actually, it's a function.

It could work as a procedure if you didn't use
views,

but with views, it must return something.

What's a View?

A view is like a screen, page, or window content.

It's an enumeration — each view has:

- A name

- A path

By default, the first view is used, unless the client
asks for another.

The function now:

- Takes the current view

- Returns the next view to display

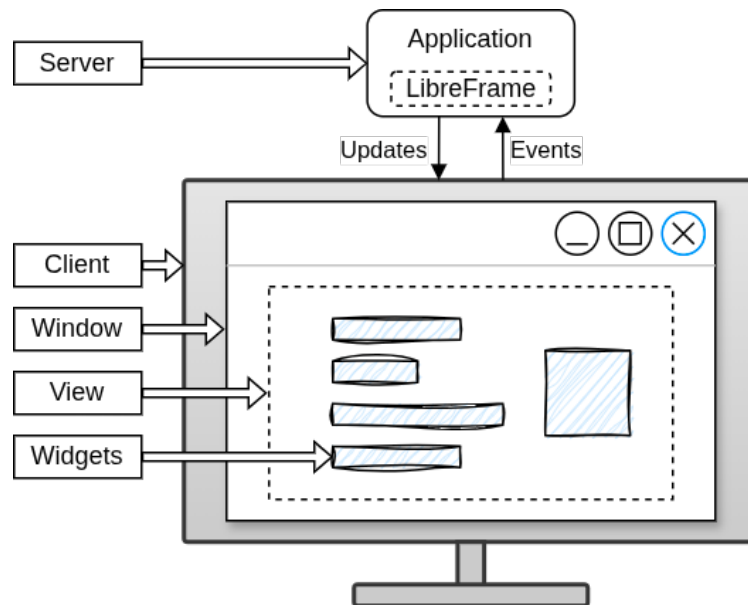
Why Views Matter

Some widgets (like Breadcrumbs or navigation
buttons)

need to know what views exist — that's why the UI
package requires the Views enum.

Server
Client
Window
View
Widgets

- Server: This is your application-wide state.
The library doesn't manage this — it's up to you.
Example: a database of usernames and passwords.
-
- Client: Each client has its own state, shared across windows.
Think of it like a session, or a browser user profile.
Example: a `Logged_In` boolean.
A client is still recognized after a reboot,
unless the user clears the cache or uses a new client ID.
-
- Window: State that exists while a window is open.
In the web client, each browser tab counts as a window.
-
- View: Exists only while the user stays on a specific screen (view).
If the user navigates or closes the window, it



One server can serve multiple clients

Each client is like a separate user session

Each client can have multiple windows

For example, several open tabs or app windows

Each window displays a view

A view is like a screen or page

Each view has containers

Usually just boxes to group widgets

A container is a type of widget too

Inside containers are the actual widgets

Like buttons, checkboxes, text fields, etc.

And you can see the client-server dialog

```
function Redraw_Window
(Current_View : in    Views;
 Frame       : in out UI.Container;
 Client      : in out Client_Data;
 Window      : in out Window_Data) return Views
```

Here's the full version of the Redraw_Window function

It now includes two extra parameters for the data layers we just talked about

I'm considering merging Frame and Window

Would use OOP to simplify the design

Might make it easier to manage state in the future

Widgets are arranged using layout containers

Currently, only a box container is supported

Inspired by CSS flexbox, but with a simpler, more limited design

A separator widget is available to create spacing between widgets

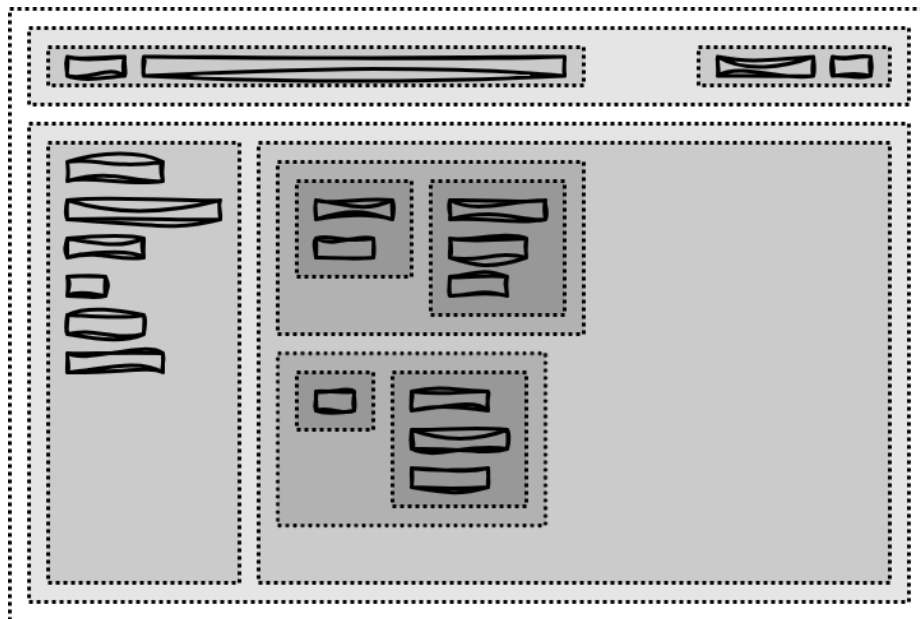
- Widgets are arranged using layout containers:
Containers are special widgets that hold other widgets

- Currently, only a box container is supported.

- Inspired by CSS flexbox, but with a simpler, more limited design: You can already build many layouts
But boxes are one-dimensional
So 2D alignment (like rows + columns) is harder
I'm considering adding a grid container later

- A separator widget is available to create spacing between widgets: A Separator widget helps create space manually
Boxes also support a spacing option
Adds automatic space between each child widget

Layout (diagram)



Here is some diagram, to illustrate what you can do with the current boxes.

API

Widgets

Clients

Server

Performance

Reliability

- API: OOPify: Use OOP features to simplify code (e.g., merge Frame & Window_Data parameters)
- Enable stopping the server cleanly
-

- Widgets:
 - Make the labels optional (not needed to make compute diffs)
 - Add some more parameters to the existing widgets (e.g. Date formatting)
 - Link some widgets to Ada types
 - Text_Field => Add [Bounded_]String versions
 - Integer_Field => Add generic versions
 - More widgets
 - Tables, Medias, Charts, Icons, Menus, Tabs, Maps, Files
-

- Clients: More client types (Text mode, SDL, GTK) and improve existing web client:
 - Date_Field: reimplement the date picker to control is Unset Time is allowed or not

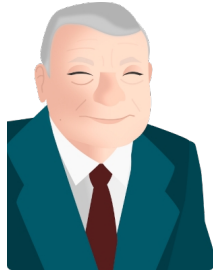
Text mode SDL mode Customized themes More GP
widgets SCADA and industrial Widgets Geographic
widget Internationalization Localization User
generated help system WS layer rewriting SQL layer
refactoring new bindings to PostgreSQL and Firebird
Make LibreFrame portable on all Linux, *BSD, MacOS and
Windows systems

Our todo list is opened this Workshop is an opportunity to
gather feedback to improve LibreFrame

Acknowledgements



Countess of Computing



The KISS inventor



The Architect

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Henley, Jean-Pierre Rosen,
Fernando Oleo Blanco, Dirk
Craeynest



Théodore



Arthur



Lounès

Thank you all
for listening

See you at the
next FOSDEM
for the first release of
LibreFrame