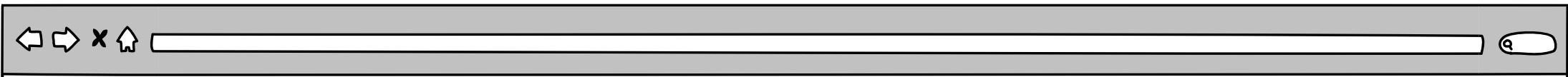


List of screens

SP-1808

- Screen 1:** Header and footer
- Screen 2:** Taranta - MVP Monitoring and control
- Screen 3:** Categories brainstorming
- Screen 4:** Telescope overview
- Screen 5:** Subarray
- Screen 6:** CSP
- Screen 7:** Styles guideline
- Screen 8:** Header style preliminary study (versions)
- Screen 9:** Dashboard UI (general view - highlighting)
- Screen 10:** Use of icons - proof of concept

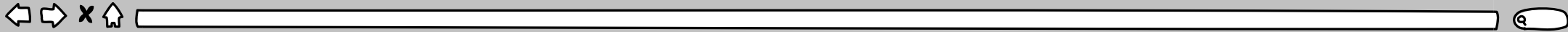


Taranta bar

 **Dashboard title**

17:30:00 LST 18:30:00 UTC
19:30:00 Local





Taranta bar

MVP Monitoring and control

17:30:00 LST 18:30:00 UTC
19:30:00 Local



Telescope

COMMANDS

State ●

Health state ●

OK ●

Component	Health state	adminMode	OpsState	Simulator
TMC	●	ONLINE	ON	-
CSP	●	ONLINE	ON	-
CBF	●	ONLINE	ON	-
PSS	UNKNOWN	OFFLINE	DISABLE	-
PST	UNKNOWN	OFFLINE	DISABLE	-
SDP	●	ONLINE	ON	-

No	DishMode	State band 1	Pointing state	Power state	DS control state
01	MAINTENANCE	DEGRADED	Unavailable	LOW	ENGINEERING
02	STANDBY_LP	STANDBY	Unavailable	LOW	REMOTE
03	OPERATE	OPERATE_FULL	TRACK	FULL	REMOTE
04	OPERATE	OPERATE_FULL	TRACK	FULL	REMOTE

SubArr	healthState	adminState	opsState	Simulator	obsState	obsMode
01	●	ONLINE	ON	-	SCANNING	IMAGING
02	UNKNOWN	OFFLINE	DISABLE	-		
03	UNKNOWN	OFFLINE	DISABLE	-		
04	UNKNOWN	OFFLINE	DISABLE	-		

Resources assigned to a subarray

Dishes

CSP-VCC

Receptors (antennas)

assigned/nominal
degraded/assigned
not operational
returning to operation

state
health
pointing
subarray health

Environment

sensors list (cooling,
temperature, power..)
graphs
weather sensors

System Health

Rolled up health status
of subsystems:
Alarms
Time sync
Resource usage (CPU,
memory, disk..)
Connections

System logs

Platforms

clusters
nodes
workers
..

Tests

create/modify tests
test results
test planner
test reports
test ticketing system

Observation

Subarrays health
Active subarrays
Active scan(s) (SB(s))
status
Scan type
Pipelines
Quick looks
Real-time calibration

User procedures and logs

wiki
user logs

Control system

Create/modify a scan
(SB)
plan/schedule a scan
(SB)

Navigation icons: back, forward, close, home, search

Taranta bar

Telescope overview

17:30:00 LST 18:30:00 UTC
19:30:00 Local

Warning icon, Camera icon, Help icon, Settings icon, User icon

State ● Health state ●

Subarrays
active: 1
health:
SAT ✔

Wind:
max speed: 5 km/h
direction: SE
Humidity: dry

Dishes 3 1
Baselines
active: 2
health: ✔

Network state ●
Disk space
Processing capacity

Platform
cluster: ●
nodes: ●
workers: ●

MONITORING OK ●

Component	Health state	adminMode	OpsState	Simulator
TMC	●	ONLINE	ON	-
CSP	●	ONLINE	ON	-
CBF	●	ONLINE	ON	-
PSS	UNKNOWN	OFFLINE	DISABLE	-
PST	UNKNOWN	OFFLINE	DISABLE	-
SDP	●	ONLINE	ON	-

No	DishMode	State band 1	State band 2	State band 3	State band 4	State band 5	Pointing state	Power state	DS control state
01	MAINTENANCE	DEGRADED	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	LOW	ENGINEERING
02	STANDBY_LP	STANDBY	Unavailable	Unavailable	Unavailable	Unavailable	Unavailable	LOW	REMOTE
03	OPERATE	OPERATE_FULL	Unavailable	Unavailable	Unavailable	Unavailable	TRACK	FULL	REMOTE
04	OPERATE	OPERATE_FULL	Unavailable	Unavailable	Unavailable	Unavailable	TRACK	FULL	REMOTE

OBSERVATION

SubArr	healthState	adminState	opsState	Simulator	obsState	obsMode	Resources
01	●	ONLINE	ON	-	SCANNING	IMAGING	Dish 3-4; VCC 1-2; FSP 1-4; SDP 01-23-45-67-89-AB
02	●	OFFLINE	ON	-	IDLE	-	-
03	●	OFFLINE	ON	-	IDLE	-	-
04	●	OFFLINE	ON	✔	IDLE	-	-

This screen is an attempt to drive the attention on the possibility to consider rolled up values that can reliably describe the telescope state.

Taranta bar
17:30:00 TAI 18:30:00 UTC
19:30:00 Local
⚠️ 📷 ? ⚙️ 👤

Subarray overview

Subarray 1 State ●
Health ●

Corr
baseline
signal
pointing

Auto Cross
 Receptors 1 2 3 4

Power

Phase

Target

Name: NGC1068

Reference frame: ICRS
ra: 02:42:40.771
dec: -00:00:47.84

Pointing: ✓
Tracking: ✓

Scan

ID: 1
Type: Science A
Progress:

Processing

Type: Correlation
Block ID: pb-mvp01-20200325-00001
Workflow: realtime v0.1.0
Buffer storage: ✓

Frequency setup

Freq band: 1
Freq min: 0.35e9
Freq max: 1.05e9

Baselines

Active baselines: 2
Baselines health: ✓

Assigned resources:

Dishes: 3,4
VCC: 1,2
FCP: 1,4
SDP: 01-23-45-67-89-AB

Component	HealthState	adminMode	OpsState	Simulator	ObsState	ObsMode
TMC	●	ONLINE	●	False	SCANNING	IMAGING
CSP	●	ONLINE	●	False	SCANNING	IMAGING
CBF	●	ONLINE	●	False	SCANNING	MAGING
SDP	●	ONLINE	●	False	SCANNING	IMAGING

OK/ON ●

Dishes ▾

No	DishMode	State band 1	Pointing state	Power state	DS control state
03	Operate	Operate_FULLL	Track	Full	Remote
04	Operate	Operate_FULLL	Track	Full	Remote

AA0.5 Mid SW version 10.3.6
20/01/2021

Basic health displays for the system: Logging of errors: Basic Engineering Data Archive.

Displays On-line signal displays during observations: For a user-selectable pair of antennas, plot autocorrelation amplitude, cross-correlation amplitude and phase against channel (frequency); individual integrations (analogous to ALMA CorrGUI): For all baselines simultaneously, waterfall plots of cross-correlation amplitude and phase against channel and time.

```

"processing_blocks": [
  {
    "id": "pb-mvp01-20200325-00001", // New format
    "workflow": { "type": "realtime", "id": "vis_receive",
                  "version": "0.1.0",
                  "parameters": {}
                },
    "sdp id":
    sbi-mvp01-20200325-00001

    NGC1068
    "ICRS", "ra": "02:42:40.771", "dec": "-00:00:47.84",

    "processing_blocks": [
      {
        "id": "pb-mvp01-20200325-00001",
        "workflow": {
          "type": "realtime",
          "id": "vis_receive",
          "version": "0.1.0"
        },
      },
    ],
    freq_min": 0.35e9, "freq_max": 1.05e9, "nchan": 372
  }
]
    
```

FSP ▾

ID	healthState	adminMode	State	Function	obsState	Subarray	Unused resources
1	●	ONLINE	ON	CORR	SCANNING	1	-
4	●	ONLINE	ON	CORR	SCANNING	1	-

Selecting FSP would show this table instead of the dishes one. Only the FSPs used by the subarray will be shown

Taranta bar
17:30:00 LST 18:30:00 UTC
19:30:00 Local

CSP

Overview Singal FPGA board Logs

CSP OK ● Degraded ● Failed ●

Component	healthState	adminMode	State	simulationMode
CSP	●	ONLINE	ON	-
CBF	●	ONLINE	ON	-
PSS	UNKNOWN	OFFLINE	ON	-
PST	UNKNOWN	OFFLINE	ON	-

VCC N/A -

ID	receptorID	HealthState	AdminMode	State	subarrayMember	obsState	frequencyBand
1	4	●	ONLINE	OK	1	SCANNING	1
2	3	●	ONLINE	OK	1	SCANNING	1
3	2	UNKNOWN	OFFLINE	DISABLED	3	IDLE	-
4	4	UNKNOWN	OFFLINE	DISABLED	4	IDLE	-

Available resources

FSP N/A -

ID	healthState	adminMode	State	Function	obsState	subarrayMember	Unused resources
1	●	ONLINE	ON	CORR	SCANNING	1	-
2	●	OFFLINE	DISABLED	-	-	-	-
3	●	OFFLINE	FAULT	-	-	-	-
4	●	ONLINE	ON	CORR	SCANNING	1	-
5	UNKNOWN	OFFLINE	DISABLED	-	-	-	-
6	UNKNOWN	OFFLINE	DISABLED	-	-	-	-
7	UNKNOWN	OFFLINE	DISABLED	-	-	-	-
8	UNKNOWN	OFFLINE	DISABLED	-	-	-	-

Auto Cross D3-D4

Input state counts Dish 3

CBF

Subarray(s)
Active : 1
Observing mode: Imaging

Scan(s)
Active: 1
Status: scanning
ID: 1

Temperature ✓

Power ✓

Cooling ✓

Voltage ✓

Fan speed ✓

AA0.5 Mid SW version 10.3.6
20/01/2021

By selecting the CBF components in the CSP table the user is shown a summary of the state of CBF.
By selecting the image icon next to CBF the user will be shown a subset of relevant quick looks.

This idea needs to be explored more considering more complex situations (more subarrays active, different types of observations and so on).

Input state counts 1 per VCC (dish). We should give the ability to choose the dish or show all 4.
It updates dynamically.
The expected shape approximates a Gaussian distribution. Both polarizations should be shown.
The image on the right isn't a realistic representation, the goal was only to convey the idea

This rack represents the configuration at AA.0.5 as reported here:
<https://confluence.skatelescope.org/display/SE/Mid+CBF+AA0.5>
More detailed screens will be needed as well as a better representation when more HW will be installed.



If any problem is detected the LED will change colour and the user will open a detailed view where more specific values are reported. the list of monitoring points is available in the CSP Mid to TM ICD.

Alternative representation of the subarray membership. It shows all 4 subarrays with a green tick to highlight the FSP membership

ID	healthState	adminMode	State	Function	obsState	Subarray 1	Subarray 2	Subarray 3	Subarray 4	Unused resources
1	●	ONLINE	ON	CORR	SCANNING	✓	-	-	-	-
2	●	OFFLINE	DISABLED	-	-	-	-	-	-	-
3	●	OFFLINE	FAULT	-	-	-	-	-	-	-
4	●	ONLINE	ON	CORR	SCANNING	✓	-	-	-	-
5	UNKNOWN	OFFLINE	DISABLED	-	-	-	-	-	-	-
6	UNKNOWN	OFFLINE	DISABLED	-	-	-	-	-	-	-
7	UNKNOWN	OFFLINE	DISABLED	-	-	-	-	-	-	-
8	UNKNOWN	OFFLINE	DISABLED	-	-	-	-	-	-	-

States:

ONLINE colour: green
 ON colour: green
 OK  

Degraded: 
 Failed: 

Fault colour: red

UNAVAILABLE colour: grey
 DISABLE colour: grey

Mode:

UNKNOWN colour: grey
 OFFLINE colour: grey



Simulator:


False colour: red


Use:


Used 
 Not used  (font: 40 px bold)
 colour: gray2 (#666666)

Icons:

 size: 25 x 25
 size: 15 x 23
 name: Idle
 colour: black #000

 size: 25 x 25
 name: Maintenance
 colour: bright blue #0054a4

 size: 22 x 28
 name: Scanning
 colour: black #000

 size: 22 x 28
 name: Imaging
 colour: bright blue #0054a4

Colours (SKAO):

navy: #070068
 white: #fff
 magenta: #E50869 magenta (orig): #f00f

Headers (SKAO):

mid blue: #005678
 bright blue: #0054a4 + menu
 orange: #ed8400
 light green: #0e977c

Background (SKAO):


blue light: #b3cde0
 orange dark: #d97900
 orange light: #ffb266

Example of a style guidelines that will need to be provided to support the UI developers in their work

Widgets: Legend

MONITORING

OK 

Component	Health state	adminMode	OpsState	Simulator
TMC		ONLINE	ON	-

Widgets: Table

N	DishMode	State band 1	State ban	State ban	State ban	State ban	Pointing st	Power st	DS control st
01	MAINTENAN	DEGRADED	Unavailab	Unavailab	Unavailab	Unavailab	Unavailabl	LOW	ENGINEERI
02	STANDBY_L	STANDBY	Unavailab	Unavailab	Unavailab	Unavailab	Unavailabl	LOW	REMOTE
03	OPERATE	OPERATE_F	Unavailab	Unavailab	Unavailab	Unavailab	TRACK	FULL	REMOTE

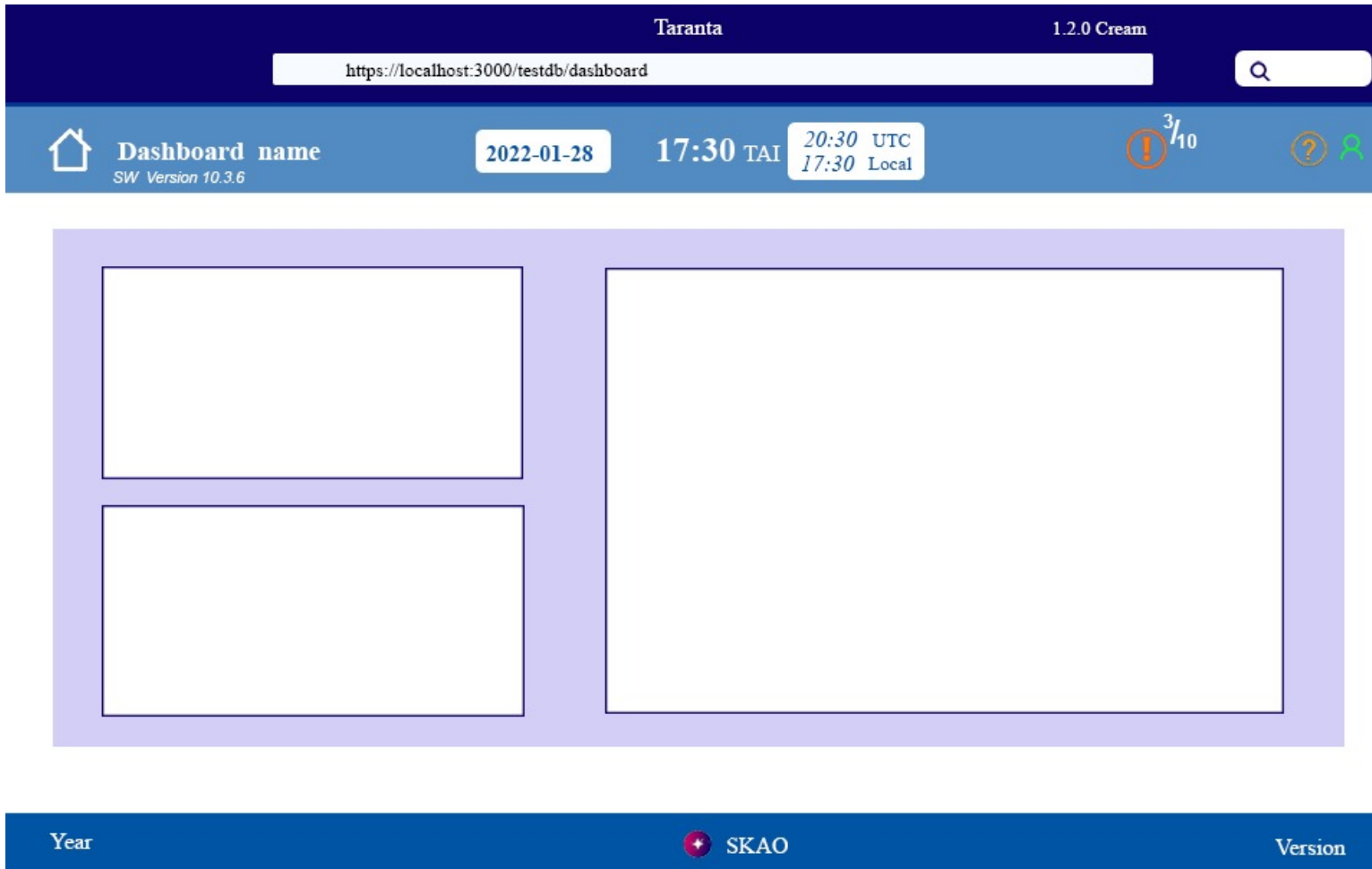
Different options for the header. The goal is to give an example of how colours and shapes can change what drives attention.
Proof of concept.

Dashboard title 17:30:00 LST 18:30:00 UTC 19:30:00 Local [Warning icon: 3/10] [Camera icon] [Help icon] [Settings icon] [Profile icon]

Dashboard title 7:30 p.m. 8:30pm UTC 9:30 pm Local [Bell icon: 3/10] [Help icon] [Settings icon] [Profile icon]

Dashboard title 7:30 p.m. LST 8:30pm UTC 9:30 pm Local [Bell icon: 3/10] [Help icon] [Settings icon] [Profile icon]

Dashboard title 7:30pm LST 8:30pm UTC 9:30 pm Local [Warning icon: 3 high priority, 10 warnings] [Help icon] [Settings icon] [Profile icon]



Colours

Base:
branding colours .

Ref:
https://docs.google.com/document/d/1phPgYhUiCkC4T_5DecQhe9D_cUtR8U1QxtdU6xePRA/edit

Headings / subheadings at the blue background

Green colour: User icon

Yellow colour: Help icon

Black colour: Custom time

This frame represents an alternative view where different colours and font styles are used to distinguish between different information. It is just an example to introduce the topic.

🏠
Subarray overview
7:30pm TAI 8:30pm UTC
9:30 pm Local
🔔 3 high priority
10 warnings
? ⚙️ 👤

Subarray 1

IDLE

CONFIGURING

READY

SCANNING

Scan:

ID: 1
Type: Science A
Progress:

Freq band: 1
Band setup: Default

SDP workflow: 📡 imaging

Observation type: 📡 imaging

Active baselines: 2

Baseline health: ✔️

Assigned resources:

Dishes: 3,4
VCC: 1,2
FCP: 1,4
SDP: 01-23-45-67-89-AB

Target: Polaris Australis

Ref

frame: ICRS
ra: 21:08:47.92
dec: -88:57:22.9

Pointing: ✔️

Component OK 🟢 Degraded: 🟡 Scanning 📡 Imaging 📡

Name	HealthState	adminMode	OpsState	Simulator	ObsState	ObsMode
TMC	🟢	ONLINE	🟢	False	📡	📡
CSP	🟢	ONLINE	🟢	False	📡	📡
CBF	🟢	ONLINE	🟢	False	📡	📡
SDP	🟡	ONLINE	🟢	False	📡	📡

Dish

No	DishMode	State band 1	State band 2	State band 3	State band 4	State band 5	Pointing state	Power state	DS control state
03	Operate	Operate_FULLL	Unavailable	Unavailable	Unavailable	Unavailable	Track	Full	Remote
04	Operate	Operate_FULLL	Unavailable	Unavailable	Unavailable	Unavailable	Track	Full	Remote

PSI Mid SW version 10.3.6
20/01/2021

An example of using icon to simplify the interpretation of some states. the chosen icons are just examples, no final choice has been made. the idean needs to be validated with the users.