MISP 3 - Teaching an Old Dog New Tricks

Paving the way forward

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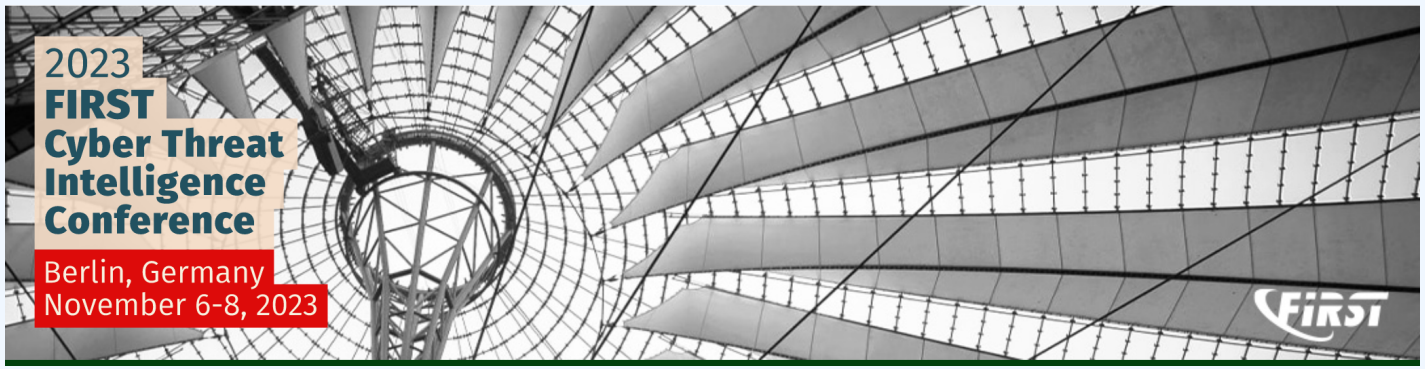
MISP Project
https://www.misp-project.org/



$ whoarewe

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Agenda

- Why MISP 3?
- The plan
- Considerations

Why MISP 3?

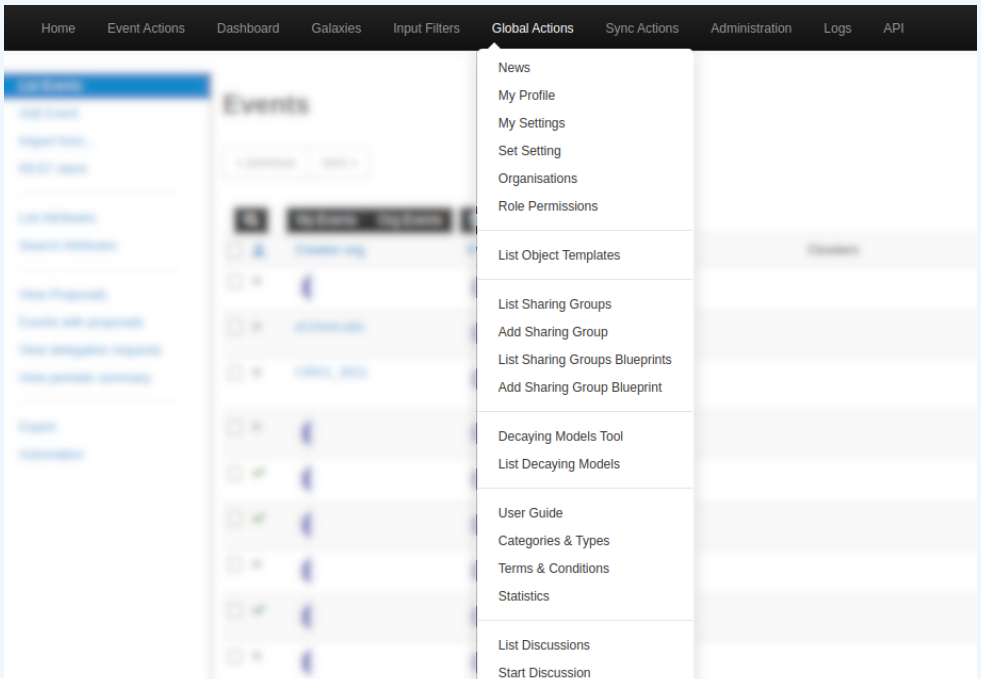
> An outdated version of the framework

CakePHP
Build fast, grow solid.

- MISP is based on CakePHP 2.x
  - End of Security Support in **June 2021**
  - Maintained fork github.com:MISP/cakephp.git
- CakePHP supports PHP version **<=7.4**
  - End of Security Support in **November 2022**

> Tacked on mechanics

- MISP supports a wide range of use cases...
- ... meaning loads of feature-clutter the interface
- All options visible regardless of the user profile
- Lack of coherent page navigation



> Shortcomings due to initial design choices

To list a few..

- Sub-optimal database structure
- Start with something small, build it out has its disadvantages
  - Attribute `type`, `value` not a first-class citizen
  - Logs all in one place
  - Indexing rework (performance and moving validation to the DB)
- Confusing mess of multiple graphing interfaces
- Files - Especially tricky with dockerised and load balanced setups
- Tagging

> The ongoing plan forward

- Port of the codebase to a new stack
  - CakePHP 2.x → CakePHP 5
- Rework of old baggage
  - Database updates
  - Front-end libraries (Bootstrap, Graphing, …)
  - Background jobs & Scheduled tasks
  - Purging old libraries

> Pruning unused / dead end functionalities

- Populate using the templating system
- Deprecated export functionalities
- Discussion / Posts
- …

Step I - Preparing the grounds

Step I - Preparing the grounds

Refactoring the codebase for improved portability using factories

- Framework-agnostic
- Reusable code for front and back-end
- Extracting and encapsulating specialised functionalities into libraries

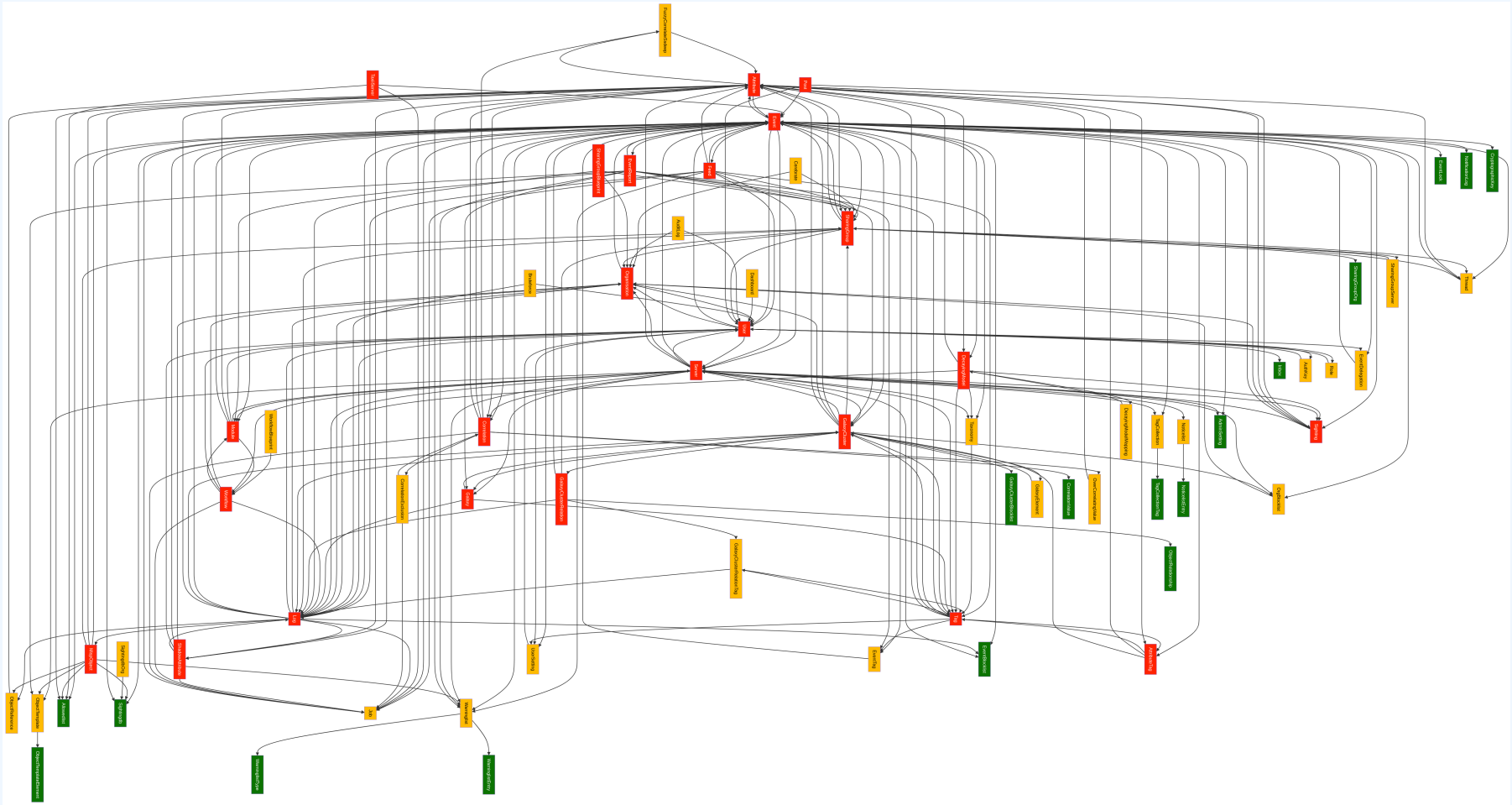
Step I - Preparing the grounds

Setting the stage with Cerebrate

- Dev started in May 2020, built on MISP3's stack
- Application built on top of ported MISP libraries
- New UI laying the foundation for MISP 3
- Streamlined integration of new features into MISP3
  - Tagging, Inbox system, Settings, ···

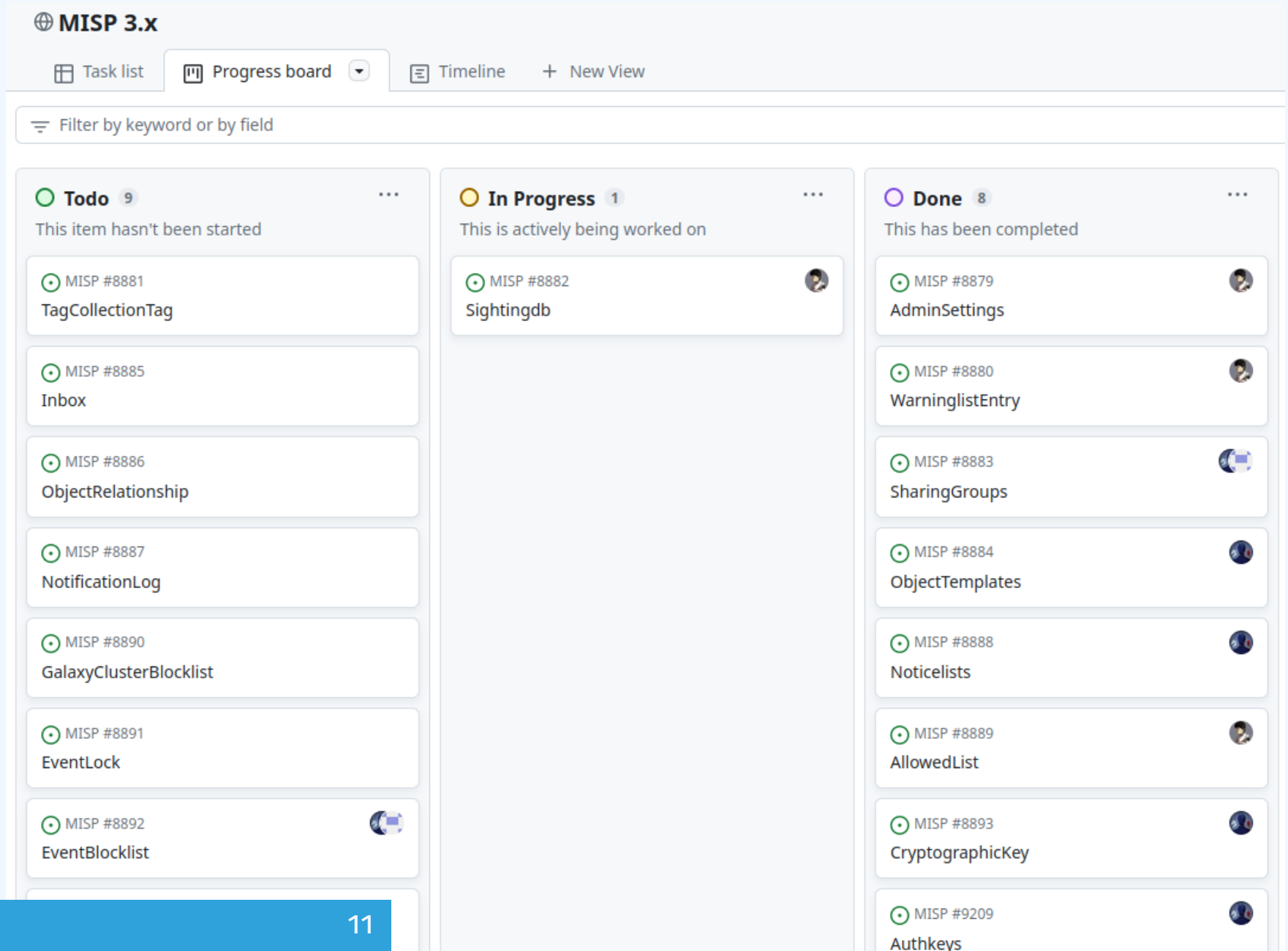
Step I - Identifying inter-dependencies

Migrate least connected part first



Step II - Porting the codebase

> Step II - Roadmap for a 3-wave porting



> Step II - Roadmap for a 3-wave porting

Wave 1 Least complex/inter-connected models

- E.g. Blocklist, Warninglist, Object-template, User

Wave 2 More glue relying on component already migrated

- E.g. Authkey, *-Tag, Taxonomy

Wave 3 The actual meat of the application

- E.g. Attribute, Event, Workflow

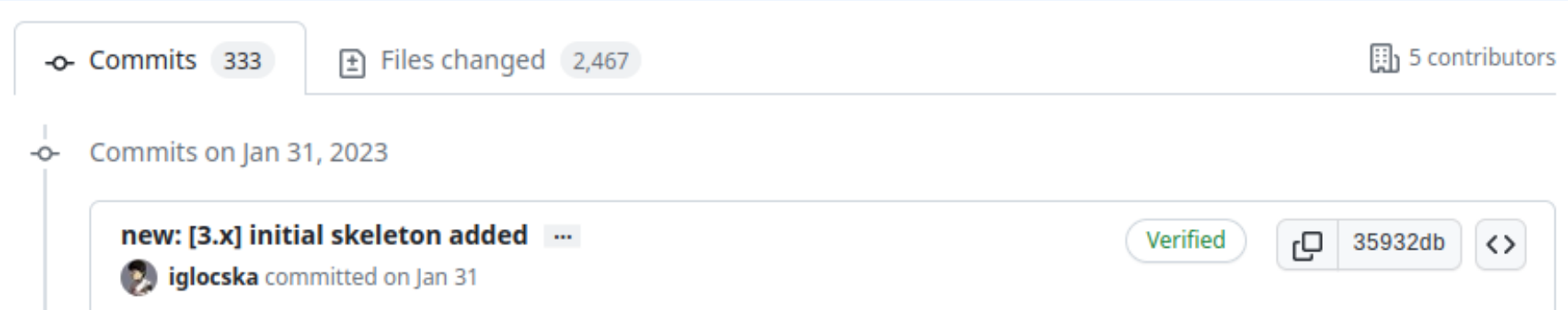
> Step II - Test driven development

```
$ composer test
> sh ./tests/Helper/wiremock/start.sh
WireMock 1 started on port 8080
> phpunit
[ * ] Running DB migrations, it may take some time ...

The WireMock server is started .....
port:                         8080
enable-browser-proxying:      false
disable-banner:               true
no-request-journal:           false
verbose:                      false

PHPUnit 8.5.22 by Sebastian Bergmann and contributors.
```

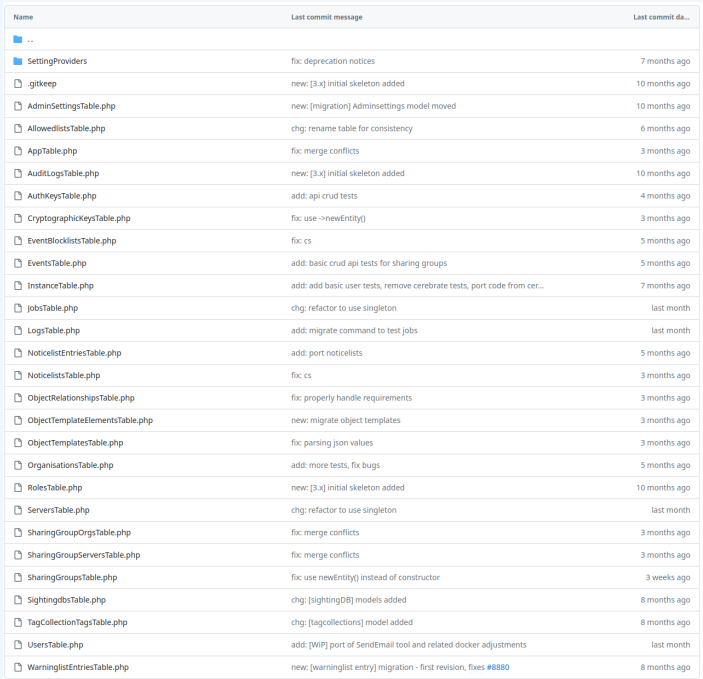
- Complementary to PyMISP test
- In-framework **Unit Tests** and **Endpoint Tests**
- Improved CI pipeline and enforced code standard

> Codebase Migration: Where We Stand I

Migration officially started in January 2023

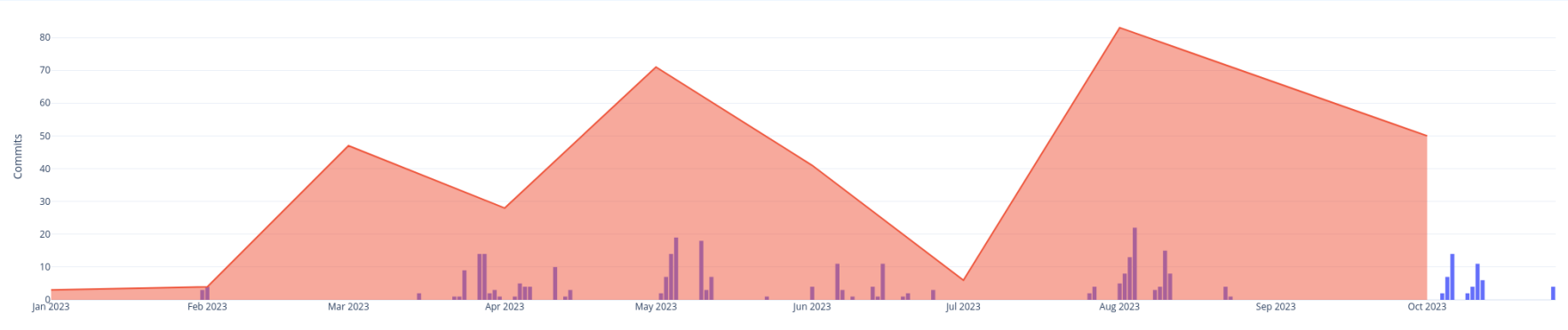


- Around **27 tables** have been moved
- Some partially, others completely

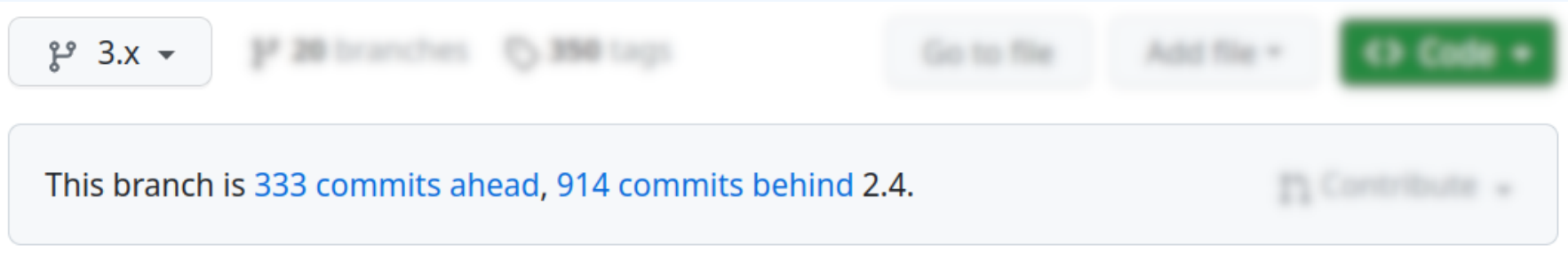


Name	Last commit message	Last commit da...
..		
SettingProviders	fix: deprecation notices	7 months ago
.gitkeep	new: [3.x] initial skeleton added	10 months ago
AdminSettingsTable.php	new: [migration] Adminsettings model moved	10 months ago
AllowedlistsTable.php	chg: rename table for consistency	6 months ago
AppTable.php	fix: merge conflicts	3 months ago
AuditLogsTable.php	new: [3.x] initial skeleton added	10 months ago
AuthKeysTable.php	add: api crud tests	4 months ago
CryptographicKeysTable.php	fix: use ->newEntity()	3 months ago
EventBlocklistsTable.php	fix: cs	5 months ago
EventsTable.php	add: basic crud api tests for sharing groups	5 months ago
InstanceTable.php	add: add basic user tests, remove cerebrate tests, port code from cer...	7 months ago
JobsTable.php	chg: refactor to use singleton	last month
LogsTable.php	add: migrate command to test jobs	last month
NoticelistEntriesTable.php	add: port noticelists	5 months ago
NoticelistsTable.php	fix: cs	3 months ago
ObjectRelationshipsTable.php	fix: properly handle requirements	3 months ago
ObjectTemplateElementsTable.php	new: migrate object templates	3 months ago
ObjectTemplatesTable.php	fix: parsing json values	3 months ago
OrganisationsTable.php	add: more tests, fix bugs	5 months ago
RolesTable.php	new: [3.x] initial skeleton added	10 months ago
ServersTable.php	chg: refactor to use singleton	last month
SharingGroupOrgsTable.php	fix: merge conflicts	3 months ago
SharingGroupServersTable.php	fix: merge conflicts	3 months ago
SharingGroupsTable.php	fix: use newEntity() instead of constructor	3 weeks ago
SightingdbsTable.php	chg: [sightingDB] models added	8 months ago
TagCollectionTagsTable.php	chg: [tagcollections] model added	8 months ago
UsersTable.php	add: [WiP] port of SendEmail tool and related docker adjustments	last month
WarninglistEntriesTable.php	new: [warninglist entry] migration - first revision, fixes #8880	8 months ago

> Codebase Migration: Where We Stand II



- Migration speed ramping up. The more we port, the faster we go

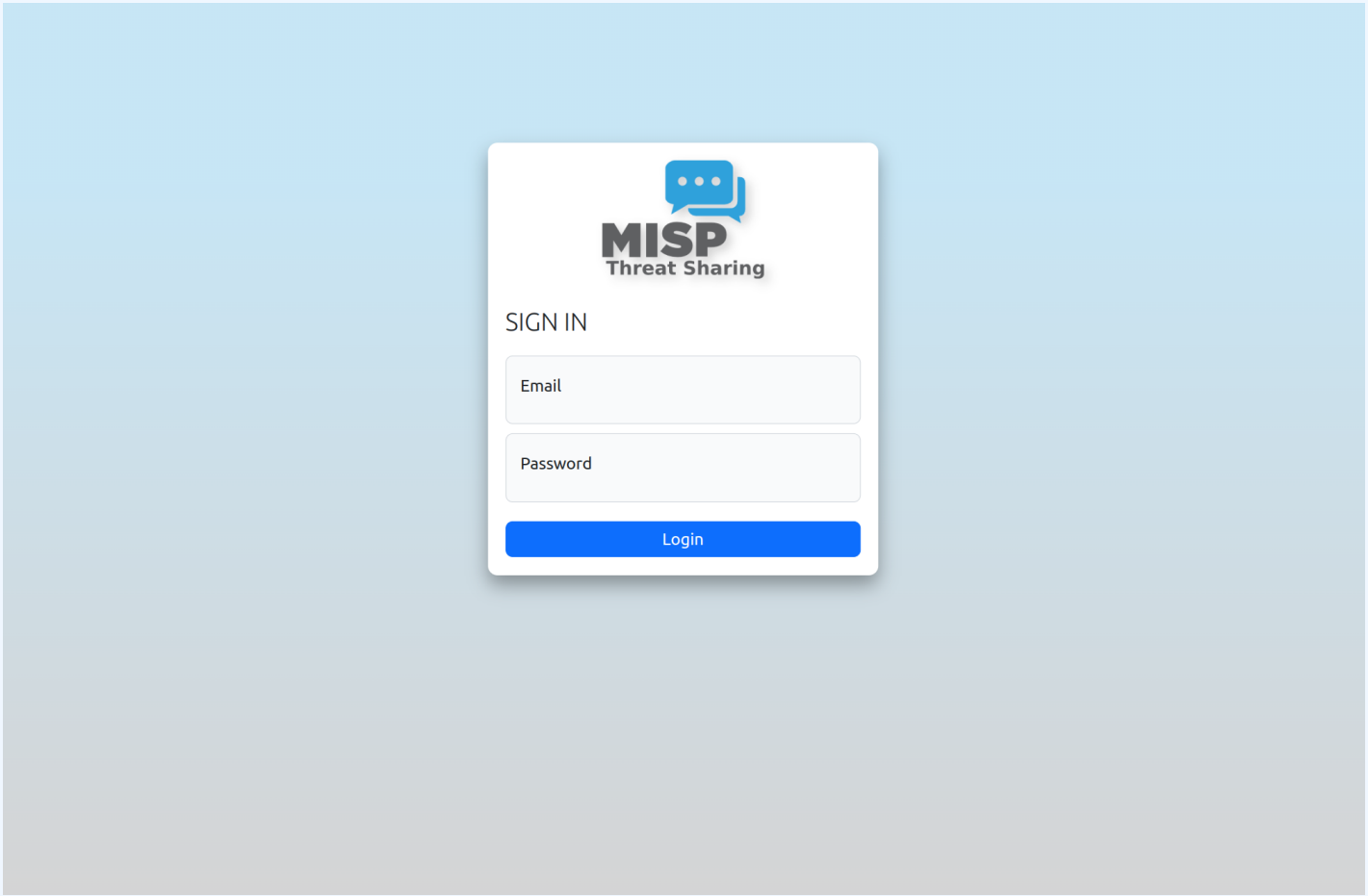


- Even while supporting and improving `2.4`

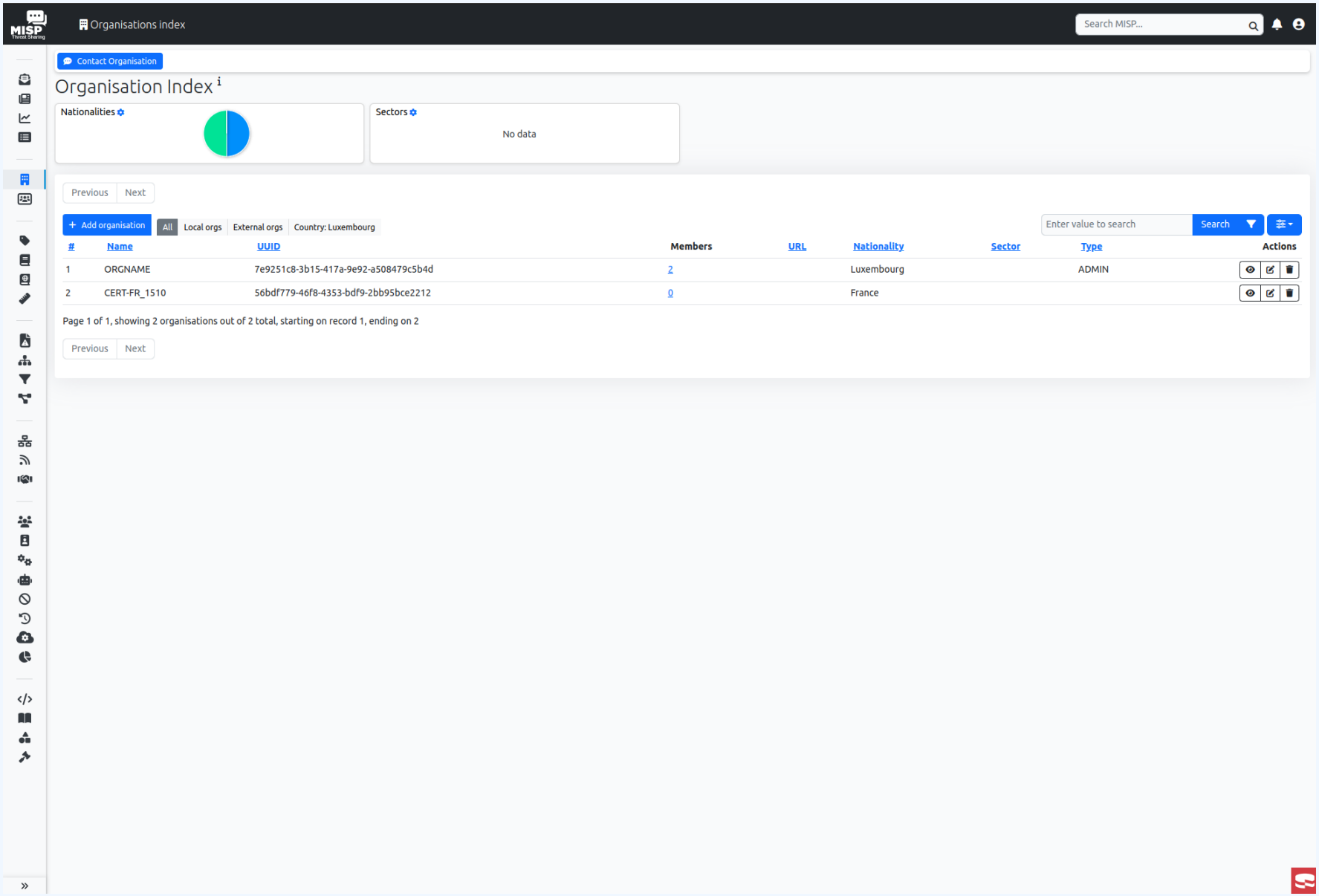
Look and Feel

Codebase Migration: Look and Feel I

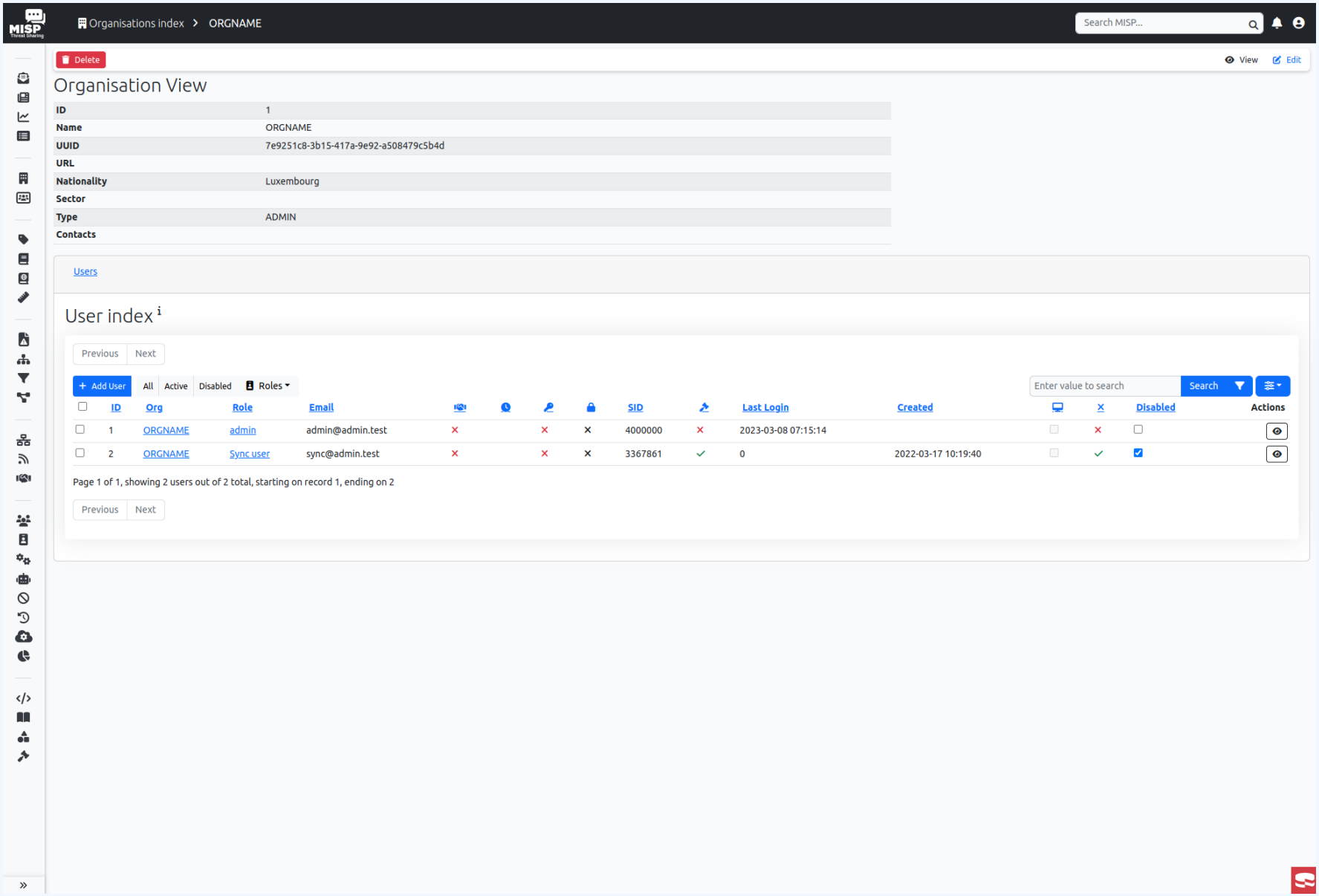
- Most of the changes are **invisible**
- Some user interfaces can still be displayed



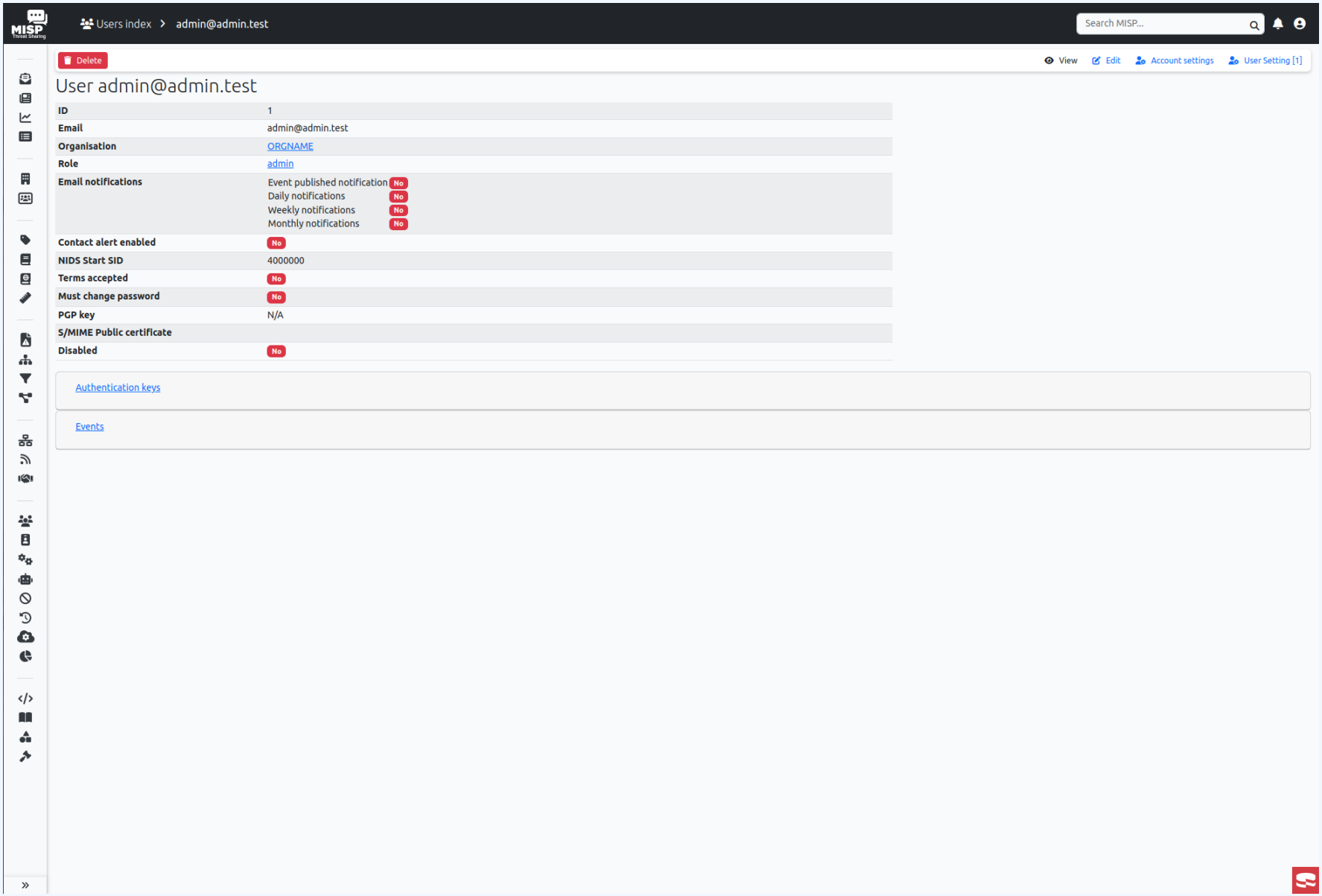
Codebase Migration: Look and Feel II



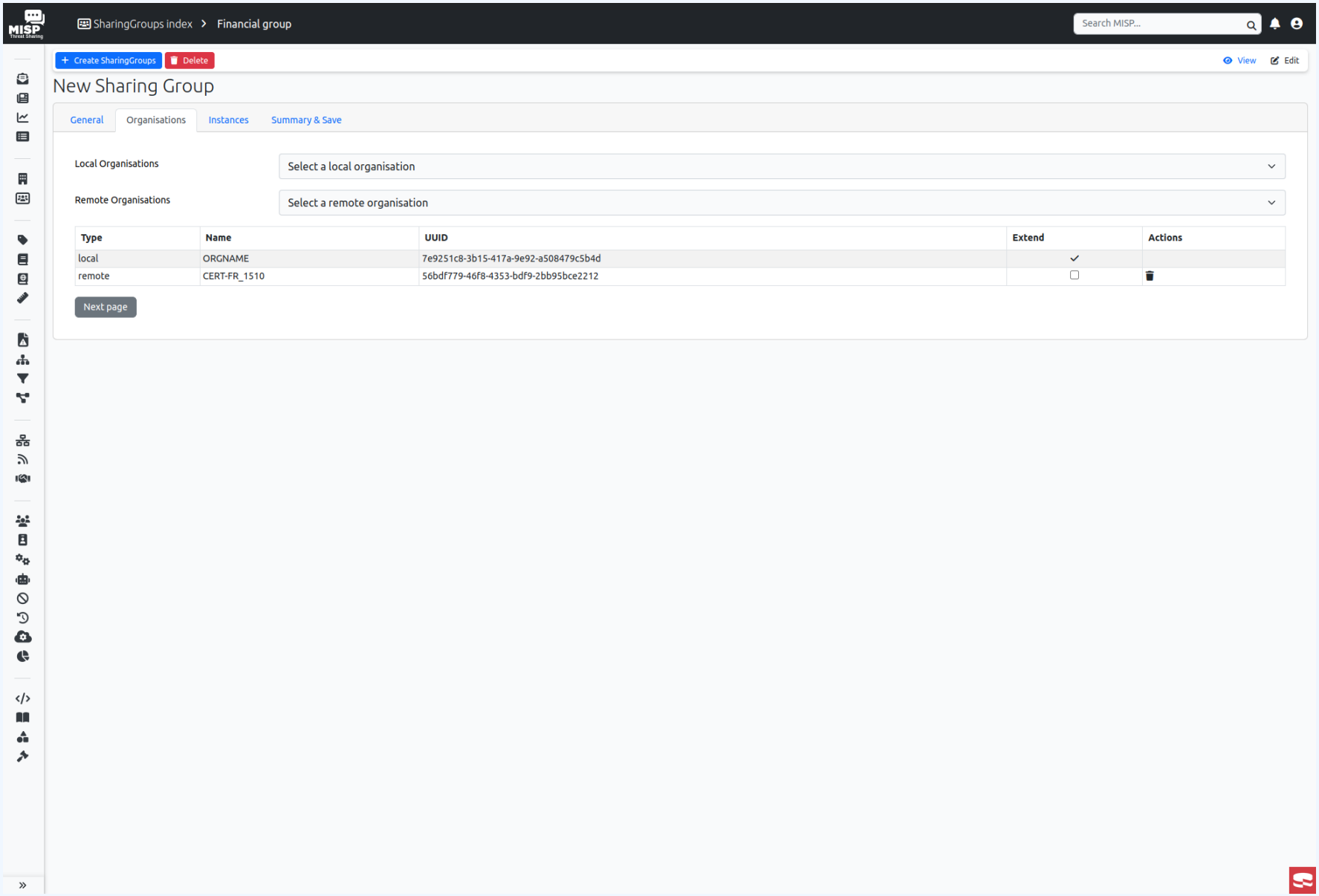
Codebase Migration: Look and Feel II



Codebase Migration: Look and Feel II



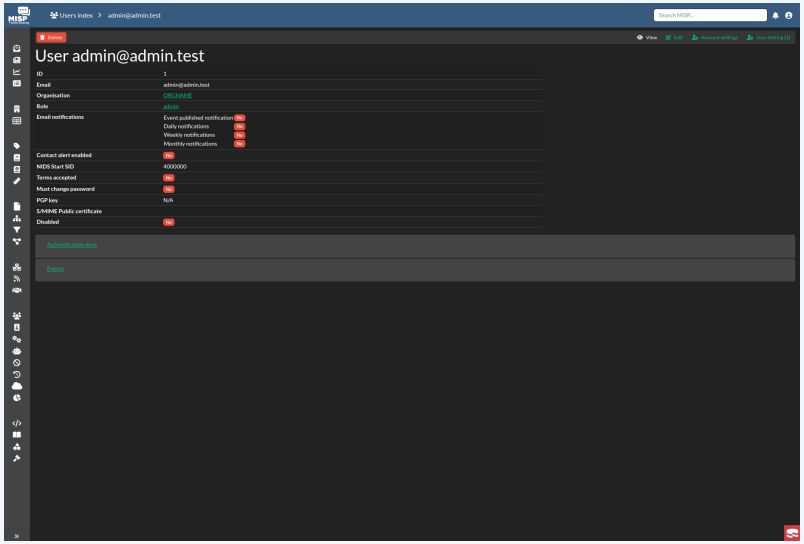
Codebase Migration: Look and Feel II

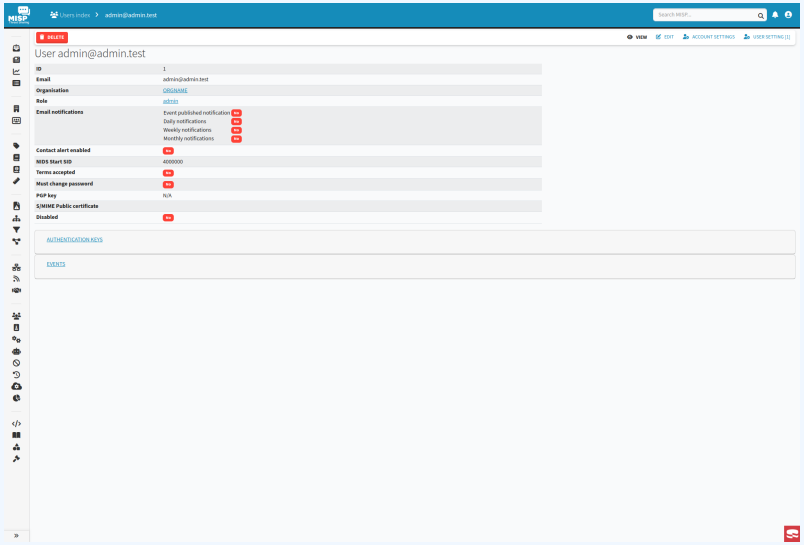


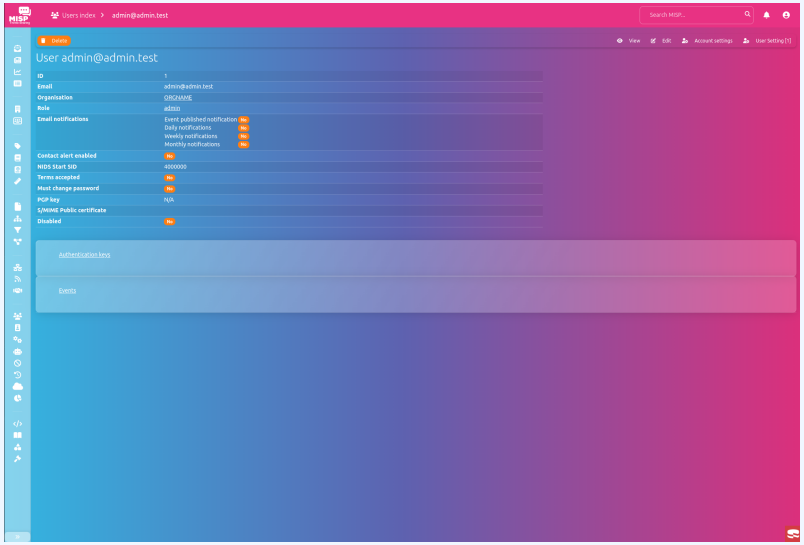
Codebase Migration: Look and Feel II

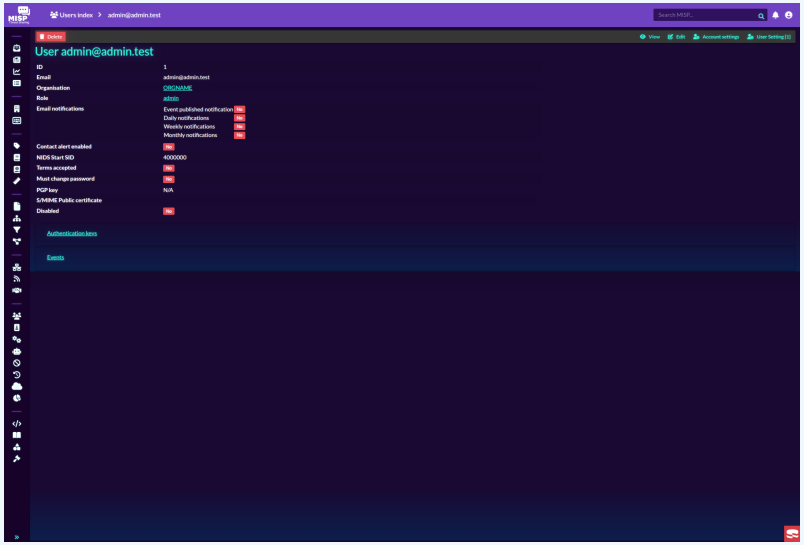
- Updating Bootstrap greatly improves aesthetics
- And allow us to integrate themes seamlessly

Codebase Migration: Look and Feel II





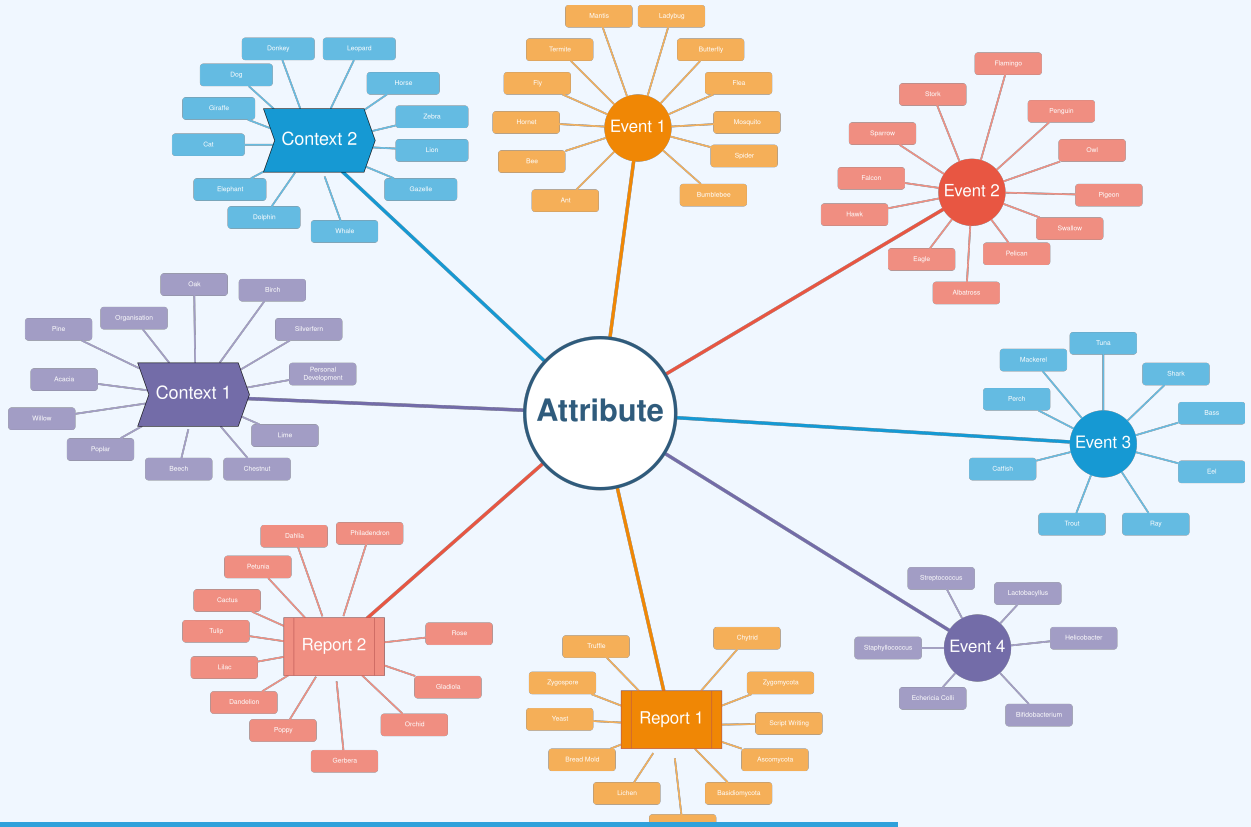




Step III - The TODOs

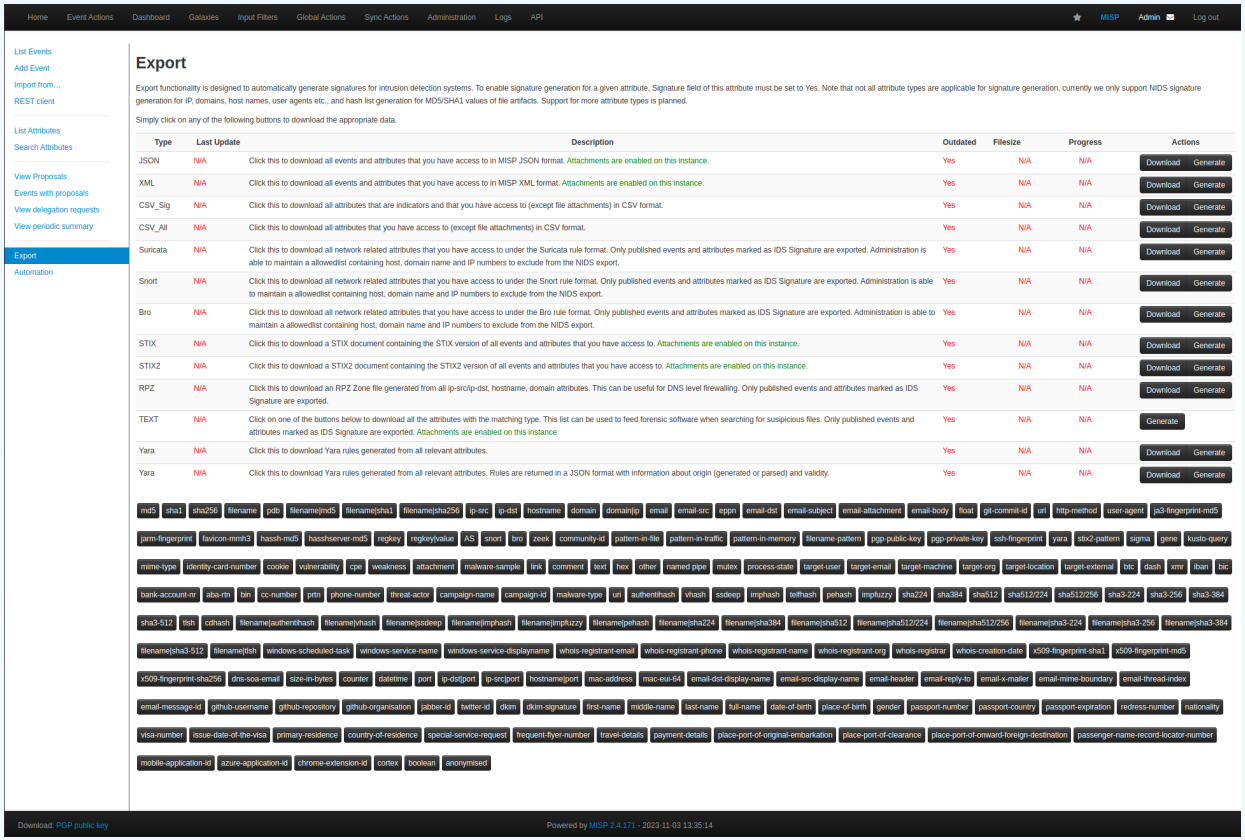
> Redefine how we interact with data I

- Indicator centric perspective
  - Alternative to the Event centric view
  - Unified view of everything we know about a given Indicator
  - Allows us to take better decisions
  - Enable users to manage their IoC working set
  - Start an investigation more easily from a single indicator



> Redefine how we interact with data II

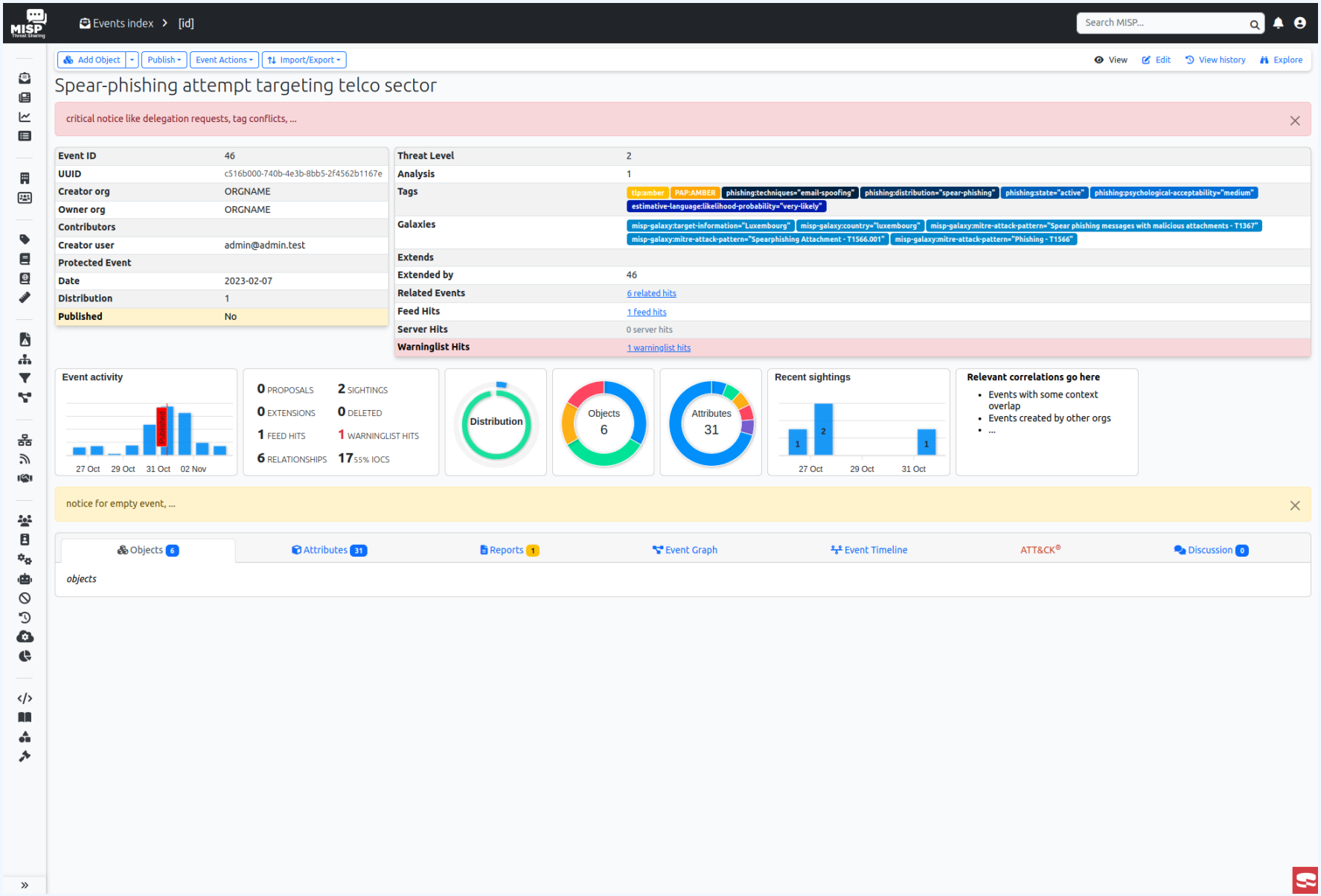
- Unified search mechanics
  - Code deduplication
  - Streamlined way to search for data
  - Opening up the full power of the API searches to UI users
  - Translation layer for the deprecated endpoints



Redefine how we interact with data III

- Refactor the Event view
  - Key Elements at first glance
  - Emphasis on the context (Insights, Taxonomies, Galaxies, Correlation, ·)
  - Massive performance gains by moving to the composition of separate atomic endpoints
  - Unified graph interface
  - Sneak peak ? ☻

Sneak peak of the new Event view - WiP



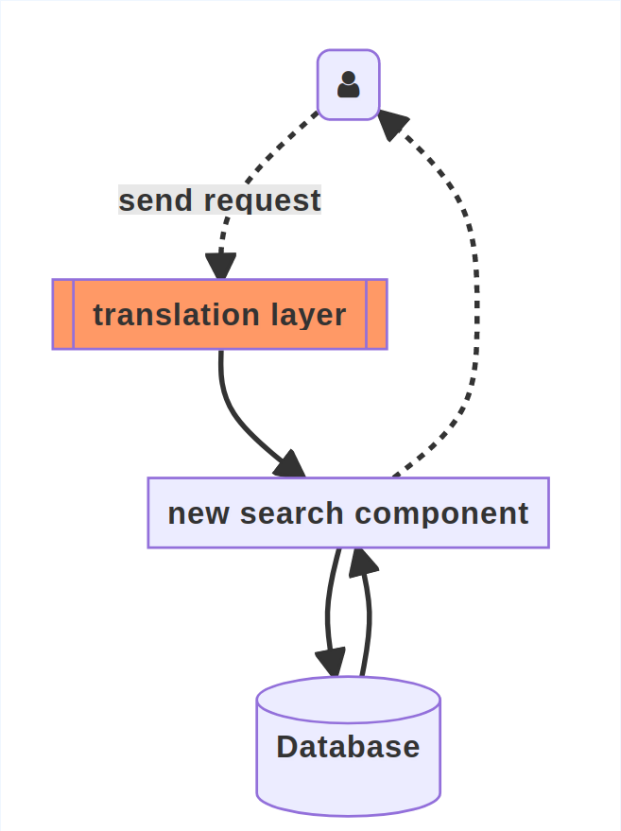
Considerations

> MISP Core format

- Created in **2012**, Officially became a standard in 2016
- **No breaking changes** since its birth, And we'll maintain this streak
- Format will keep evolving to support new functionalities

> API Compatibility

- The aim is to achieve a **near 100% compatibility** with the old API
- "Near" only due to the functionalities removed as a result of deprecation.
- Strategy: Mapping with a translation layer



> Synchronisation compatibility

- API Compatibility means Synchronisation compatibility
- MISP 3 servers will be able to sync with MISP 2.4 and vice versa

BUT

- MISP **2.4** → **3**
  - Full support
- MISP **3** → **2.4**
  - Lossy when sharing new types of datapoints
  - E.g: Tags on Objects

> Support for MISP 2.4

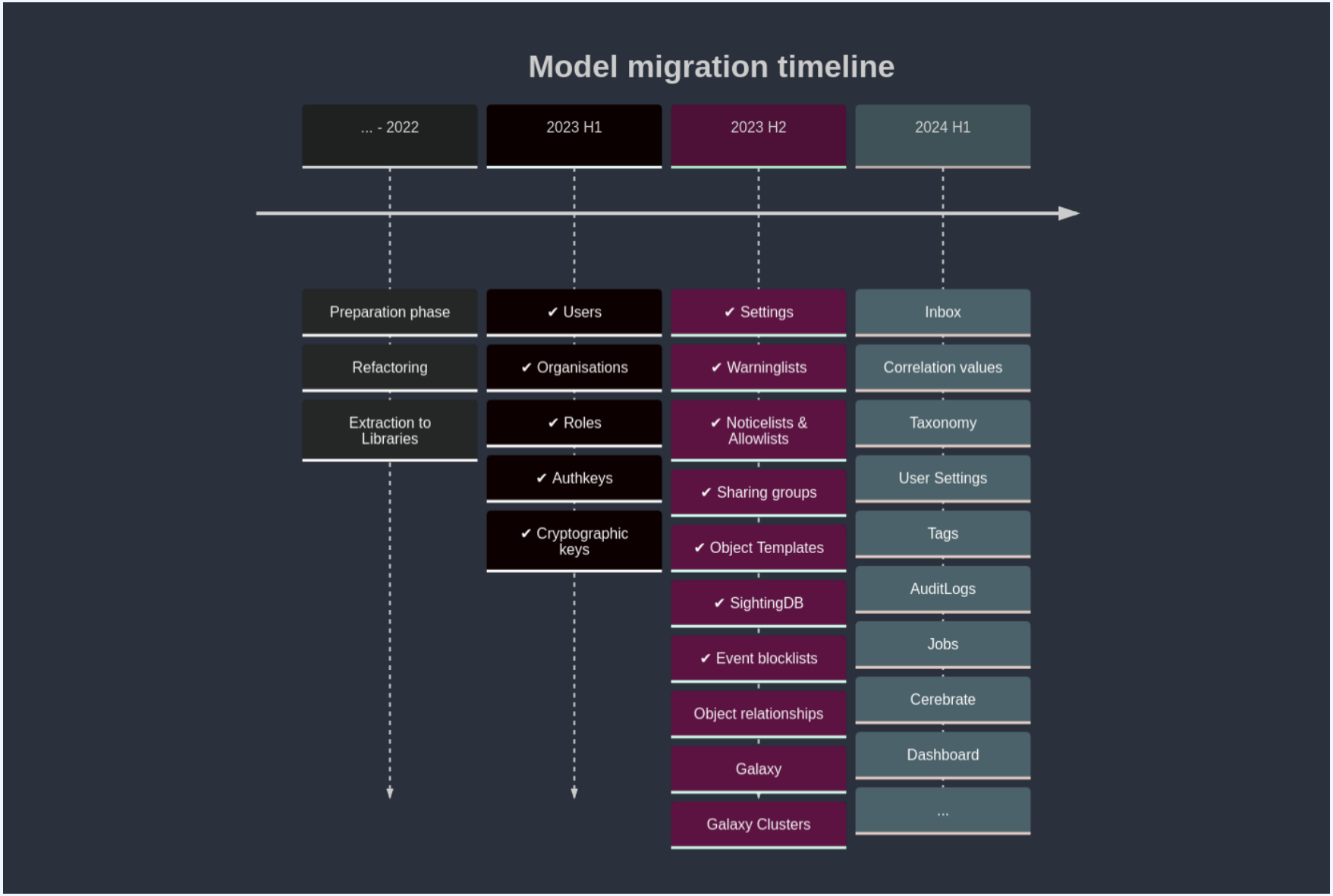
- MISP 2.4 will be **supported for a limited time**
- **6 months** support post MISP 3 release
  - Potential changes/improvements on 2.4 to better support MISP 3 interactions

> Migration support for 2.4 → 3

- No one-click update; manual script execution required
- Migration tools will be included in MISP 3 to help you
- This allows us to make underlaying changes such as
  - Database changes
  - Libraries changes (e.g supervisor in favour of cake-resque)

> Installation for new instances

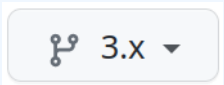
- **Simplified** installation based on package managers
- Upstream Docker installer
- OS targerts: **Ubuntu** and **RHEL**


Model migration timeline
... - 2022
2023 H1
2023 H2
2024 H1
Preparation phase
Refactoring
Extraction to Libraries
✔ Users
✔ Organisations
✔ Roles
✔ Authkeys
✔ Cryptographic keys
✔ Settings
✔ Warninglists
✔ Noticelists & Allowlists
✔ Sharing groups
✔ Object Templates
✔ SightingDB
✔ Event blocklists
Object relationships
Galaxy
Galaxy Clusters
Inbox
Correlation values
Taxonomy
User Settings
Tags
AuditLogs
Jobs
Cerebrate
Dashboard
...

> Key take-aways from the upcoming version

- Reworked UX
- Alternative, Analyst centric in addition to the data centric approach
- Improved search and trend monitoring tools
- Improved performance and resilience
- Want to get involved?
- Removal of the main painpoints of MISP 2.x's limitations across the board

> Our hopes and expectations for the FIRST community

- We will list features marked for culling
  - If you're using any of them, please let us know!
- We will be lauching a beta phase in the future
  - Feedback & improvements are more than welcome!
- Want to get involved?
  - 

3-x branch - `MISP/MISP/tree/3.x`
  - Project for migration - `github.com/orgs/MISP/projects/2`