MISP CORE DEVELOPMENT CRASH COURSE

How I learned to stop worrying and love the PHP

CIRCL / Team MISP Project

NSPA

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Some things to know in advance...

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- Using the MVC framework CakePHP 2.x
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MVC frameworks in general

- separation of business logic and views, interconnected by controllers
- main advantage is clear separation of the various components
- lean controllers, fat models (kinda...)
- domain based code reuse
- No interaction between Model and Views, ever

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Structure of MISP Core app directories

- Config: general configuration files
- Console: command line tools
- Controller: Code dealing with requests/responses, generating data for views based on interactions with the models
- Lib: Generic reusable code / libraries
- Model: Business logic, data gathering and modification
- Plugin: Alternative location for plugin specific codes, ordered into controller, model, view files
- View: UI views, populated by the controller

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Controllers - scope

- Each public function in a controller is exposed as an API action
- request routing (admin routing)
- multi-use functions (POST/GET)
- request/response objects
- contains the action code, telling the application what data fetching/modifying calls to make, preparing the resulting data for the resulting view
- grouped into controller files based on model actions
- Accessed via UI, API, AJAX calls directly by users
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Controllers - functionalities of controllers

- pagination functionality
- logging functionality
- Controllers actions can access functionality / variables of Models
- Controllers cannot access code of other controller actions (kind of...)
- Access to the authenticated user's data
- beforeFilter(), afterFilter() methods
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  - Authentication components
  - RestResponse component
  - ACL component
  - Cidr component
  - IOCImport component (should be moved)

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Controllers - additional functionalities

- Handling API responses (RestResponseComponent)
- Handling API requests (IndexFilterComponent)
- auth/session management
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- CRUD Component
- Security component
- important: quertString/PyMISP versions, MISP version handler
- future improvements to the export mechanisms

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- Controls anything that has to do with:
  - finding subsets of data
  - altering existing data
  - inherited model: AppModel
  - reusable code for models: Behaviours
  - regex, trim

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Model - hooking pipeline (add/edit)

- Hooks / model pipeline for data creation / edits
  - beforeValidate() (lowercase all hashes)
  - validate() (check hash format)
  - afterValidate() (we never use it
  - could be interesting if we ever validated without saving)
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Models - hooking pipeline (delete/read)

- Hooks for deletions
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- generic cleanup/data migration tools
- centralised redis/pubsub handlers
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Views - scope and structure

- templates for views
- layouts
- reusable template code: elements
  - attribute list, rows (if reused)
- reusable code: helpers
  - commandhelper (for discussion boards), highlighter for searches, tag colour helper
- views per controller

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Views - Types of views and helpers

- ajax views vs normal views
- data views vs normal views vs serialisation in the controller
- sanitisation h()
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- Mostly in genericElements
- Preparing the move to Cake4
- Important ones
  - Form - generate forms in a standardised way (/add, /edit, etc)
  - IndexTable - index lists using Field templates (/index, etc)
  - SingleViews - key-value lists with child elements (/view, etc)
  - Menues - to be refactored, see Cerebrate

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General reusable libraries

- Located in app/Lib
- Code that is to be reused across several layers
- Important ones
  - Dashboard - Dashboard widget backend code
  - EventReport - Report generation
  - Export - MISP -> external format converter modules
  - Tools - List of generic helper libraries - examples:
    - Attachment, JSON conversion, random generation, emailing, sync request generation
    - Kafka, ZMQ, AWS S3, Elastic integration, PGP encryption, CIDR operations

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Distribution

- algorithm for checking if a user has access to an attribute
- creator vs owner organisation
- distribution levels and inheritance (events -> objects -> attributes)
- shorthand inherit level
- sharing groups (org list, instance list)
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Testing your code

- funtional testing
- Github actions
- impact scope
  - view code changes: only impacts request type based views
  - controller code changes: Should only affect given action
  - model code changes: can have impact on entire application
  - lib changes: can have affect on the entire application
- Don't forget: queryACL, change querystring

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