

**PMR Insight Collective Knowledge (PICK)
Class-responsibility-collaboration Model**

Version 1.2

3/8/2020

Document Control

Approval

The Guidance Team and the customer shall approve this document.

Document Change Control

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Distribution List

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Change Summary

The following table details changes made between versions of this document

Version	Date	Modifier	Description
0.1	2/14/2020	David Rayner	Added template Added Settings, Node, Graph, ProjectMerge, History, UIChangeConfig, UIVectorConfig, UI
0.1	2/14/2020	Angel Villalpando	Added UiDirectoryConfig, UiEventConfig, UiFilterConfig, UiVectorDBLead, LogFile, EnforcementActionReport, Validator, ExportTable, ExportGraph
0.2	2/16/2020	Jorge Garcia	Added UiVectorConfig, formatting
0.2	2/16/2020	Valentin Becerra	Node, Log Entry, Graph, Vector
0.3	2/17/2020	Mario Delgado	Edited document, made changes to UiVectorConfig
1.0	2/17/2020	Anthony DesArmier	Verified UiDirectoryConfig, UiEventConfig, UiFilterConfig, UiVectorDBLead, LogFile, EnforcementActionReport, Validator, ExportTable, ExportGraph

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 1
-----	------------	--------------------------	-----------

Class-responsibility-collaboration Model

1.1	3/2/2020	Software Team	Added/linked class collaborators responsibilities. Added Sync, QObject, Dictionary, and SplunkManager CRCs
1.2	3/8/2020	Anthony DesArmier	Added Main, refactored all CRCs

Class: Main

Description: Serves as an entry and exit point to the system.

Responsibilities:

1. Loads the event object from file. (Event 10)
2. Loads the settings object from file. (Settings 18)
3. Loads the vector IDDict from file. (IDDict 6)
4. Loads the log file IDDict from file. (IDDict 6)
5. Loads the log entry IDDict from file. (IDDict 6)
6. Saves the log file IDDict to file. (IDDict 5)
7. Saves the log entry IDDict to file. (IDDict 5)
8. Saves the settings object to file. (Settings 17)
9. Launches UI.

Collaborators:

- Event
- Settings
- IDDict

Class: UiChangeConfig

Description: Commit window handles committing of log entry and vector changes.

Responsibilities:

1. Display vector changes. (History 1)
2. Display node changes. (History 1)
3. Display relationship changes. (History 1)
4. Saves vector, node, and relationship changes. (History 2)

Collaborators:

- History

Class: UiDirectoryConfig

Description: Handles the setting of file or file path directories.

Responsibilities:

1. Displays user provided directory path for root ingestion. (Settings 7)
2. Displays red team directory path. (Settings 4)
3. Displays blue team directory path. (Settings 5)
4. Displays white team directory path. (Settings 6)
5. Collects user provided directory path for root ingestion. (Settings 15)
6. Collects red team directory path. (Settings 12)
7. Collects blue team directory path. (Settings 13)
8. Collects white team directory path. (Settings 14)

Collaborators:

- Settings

Class: UiEventConfig

Description: Handles the setting of project event information.

Responsibilities:

1. Displays event name. (Event 1)
2. Displays event description. (Event 2)
3. Displays event start timestamp. (Event 3)
4. Displays event end timestamp. (Event 4)
5. Collects event name. (Event 5)
6. Collects event description. (Event 6)

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 3
-----	------------	--------------------------	-----------

7. Collects event start timestamp. (Event 7)
8. Collects event end timestamp. (Event 8)
9. Saves event information to file. (Event 9)

Collaborators:

- Event

Class: UiExportConfig

Description: The export window which handles exporting vector and entry data to an external file.

Responsibilities:

1. Collects specified directory.
2. Collects directory file format.
3. Collects name for exported file.
4. Creates an image file of vector graph. (ExportGraph 1)
5. Creates a csv file of vector table. (ExportTable 1)

Collaborators:

- ExportTable
- ExportGraph

Class: UiFilterConfig

Description: Collects the search criteria to the system generated log entries, nodes, and relationships.

Responsibilities:

1. Collects keywords to search for in generated log entries, nodes, and relationships.
2. Collects the start/end timestamp search-criteria to apply to generated log entries and nodes.
3. Collects the “creator” (red, white, or blue) search criteria for generated log entries and nodes.
4. Collects the “event type” (red, white, or blue) search-criteria for generated log entries and nodes.
5. Knows keywords.
6. Knows timestamps.
7. Knows “creator”.
8. Knows “event type”.

Collaborators:

Class: UiTeamConfig

Description: The window which handles the system role and connections to the host when running as a client.

Responsibilities:

1. Displays lead status. (Settings 1)
2. Displays host machine IP address. (Settings 2)
3. Displays lead machine IP address. (Settings 3)
4. Collects lead status. (Settings 9)
5. Collects host machine IP address. (Settings 10)
6. Collects lead machine IP address. (Settings 11)
7. Displays number of connections to the lead machine IP address.

Collaborators:

- Settings

Class: UiVectorConfig

Description: The vector window which handles the adding, editing, and deleting of vectors and their descriptions.

Responsibilities:

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 4
-----	------------	--------------------------	-----------

1. Displays vector name. (IDDict 4; Vector 1)
2. Displays vector description. (IDDict 4; Vector 2)
3. Collects vector name.
4. Collects vector description.
5. Adds a new vector. (IDDict 1)
6. Deletes a vector. (IDDict 2)
7. Edits existing vector attributes. (IDDict 3; Vector 3-4)

Collaborators:

- IDDict
- Vector

Class: UiRelationshipConfig

Description: Handles the relationship table for the active vector.

Responsibilities:

1. Display relationship id. (IDDict 4)
2. Display parent id. (IDDict 4; Relationship 1)
3. Display child id. (IDDict 4; Relationship 2)
4. Display label. (IDDict 4; Relationship 3)
5. Collects parent id.
6. Collects child id.
7. Collects label description.
8. Adds a new relationship. (IDDict 1)
9. Deletes a relationship. (IDDict 2)
10. Edits existing relationship attributes. (IDDict 3; Relationship 5-7)

Collaborators:

- IDDict
- Relationship

Class: UiVectorDBAnalyst

Description: The analyst vector DB window which handles the pulling and pushing of vector changes between the analyst and host systems.

Responsibilities:

1. Displays lead's pull table. (Sync 2; IDDict 3; Vector 1-2; Graph 5)
2. Displays client's push table. (Vector 1-2; Graph 5)
3. Initiates pull request from lead's table. (Sync 2; IDDict 3; Vector 1-2)
4. Initiates push request from client's table. (Sync 1; IDDict 3; Vector 1-2)

Collaborators:

- ProjectMerge
- Vector
- Graph
- Sync

Class: UiVectorDBLead

Description: The lead vector DB window which handles the accepting of queued analyst push requests.

Responsibilities:

1. Knows pending push requests from clients. (Sync 3)
2. Accept push requests to the database. (ProjectMerge 2, Sync 4)
3. Declines push requests to the database. (Sync 4)

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 5
-----	------------	--------------------------	-----------

4. Display information to be pushed to the database. (Vector 1-2; Graph 5)

Collaborators:

- ProjectMerge
- Vector
- Graph
- Sync

Class: UI

Description: The main window which serves as entry point to the application and provides the bulk of the system's interface.

Responsibilities:

10. Launches UiChangeConfig.
11. Launches UiDirectoryConfig.
12. Launches UiEventConfig.
13. Launches UiExportConfig.
14. Launches UiFilterConfig.
15. Launches UiTeamConfig.
16. Launches UiVectorConfig.
17. Launches UiRelationshipConfig.
18. Launches UiVectorDBAnalyst when not lead. (Settings 1)
19. Launches UiVectorDBLead when lead. (Settings 1)
20. Knows the vector IDDict.
21. Knows the log file IDDict.
22. Knows the log entry IDDict.
23. Discovers log files. (Settings 4-7; IDDict 1)
24. Displays log file table. (IDDict 3; LogFile 1-3, 7, 9)
25. Displays Enforcement Action Report table. (EnforcementActionReport 1)
26. Selects an Enforcement Action Report to display. (LogFile 9)
27. Cleanses log files. (Validator 1-2)
28. Validates log files. (Validator 3)
29. Ingests log files. (SplunkManager 1)
30. Retrieves indexed log entries. (SplunkManager 2; IDDict 1)
31. Displays log entry table. (IDDict 4; LogEntry 1-3)
32. Assigns log entries to vectors. (Vector 1-2)
33. Sets active vector. (IDDict 3; ActiveVector 2-4)
34. Displays active vector name. (ActiveVector 1; Vector 1)
35. Displays active vector description. (ActiveVector 1; Vector 2)
36. Displays node table. (ActiveVector 1; Vector 1-2)
37. Adds nodes. (ActiveVector 1; Vector 5)
38. Edits node properties. (ActiveVector 1; Vector 7, 11-19)
39. Knows node visibility. (ActiveVector 1; Vector 7; Node 9)
40. Sets node visibility. (ActiveVector 1; Vector 7; Node 19)
41. Deletes nodes. (ActiveVector 1; Vector 6)
42. Displays node property visibilities. (ActiveVector 1; Vector 13)
43. Selects node property visibilities. (ActiveVector 1; Vector 14)
44. Displays vector graphical view. (ActiveVector 1; Graph 5)
45. Zooms in/out on the graphical view.
46. Knows the timeline orientation. (Graph 1)
47. Knows the timeline interval. (Graph 2)
48. Sets the timeline orientation. (Graph 3)

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 6
-----	------------	--------------------------	-----------

49. Sets the timeline interval. (Graph 4)

Collaborators:

- Settings
- IDDict
- LogFile
- Validator
- EnforcementActionReport
- SplunkManager
- LogEntry
- Vector
- ActiveVector
- Node
- Graph

Class: History

Description: Knows the vectors', nodes' and relationships' history of changes.

Responsibilities:

1. Displays changes to vector, node, and relationship tables. (IDDict 4; Vector 1-2, 8, 12; Node 1-10; Relationship 1-4)
2. Saves changes made to vector, node, and relationship tables. (IDDict 5)

Collaborators:

- IDDict
- Vector
- Node
- Relationship

Class: Event

Description: Maintains the information and attributes that describe the specific event in a given analysis/session.

Responsibilities:

1. Knows user-provided event name.
2. Knows user-provided event description.
3. Knows user-provided start timestamp.
4. Knows user-provided end timestamp.
5. Records user-provided event name.
6. Records user-provided event description.
7. Records user-provided start timestamp.
8. Records user-provided end timestamp.
9. Saves itself to file.
10. Loads itself from file.

Collaborators:

Class: LogFile

Description: The log file class will read the user-provided directory path and import the contents of the file.

Responsibilities:

1. Knows cleansing status.
2. Knows validation status.
3. Knows ingestion status.
4. Records cleansing status.

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 7
-----	------------	--------------------------	-----------

5. Records validation status.
6. Records ingestion status.
7. Knows log file name.
8. Creates copy of cleansed file.
9. Knows enforcement action report.
10. Records enforcement action report.

Collaborators:

Class: LogEntry

Description: The indexed entries from a log file.

Responsibilities:

1. Knows entry timestamp.
2. Knows entry description.
3. Knows log file name.

Collaborators:

Class: Graph

Description: Knows and renders nodes, relationships, their relative positions, and their properties.

Responsibilities:

1. Knows graph orientation.
2. Knows timeline interval.
3. Records graph orientation.
4. Records timeline interval.
5. Renders nodes. (Vector 8; Node 1-10)
6. Renders relationships. (Vector 12; Relationship 1-4)
7. Moves node. (Vector 7; Node 20)
8. Moves relationship. (Vector 11; Relationship 4)

Collaborators:

- Vector
- Node
- Relationship

Class: Node

Description: Responsible for the storage of log entry properties.

Responsibilities:

1. Knows node name.
2. Knows node timestamp.
3. Knows node description.
4. Knows node log entry reference.
5. Knows node log creator.
6. Knows node event type.
7. Knows node icon type.
8. Knows node source filename.
9. Knows node visibility.
10. Knows node coordinate position.
11. Records node name.
12. Records node timestamp.
13. Records node description.
14. Records node log entry reference.
15. Records node log creator.

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 8
-----	------------	--------------------------	-----------

16. Records node event type.
17. Records node icon type.
18. Records node source filename.
19. Records node visibility.
20. Records node coordinate position.

Collaborators:

Class: Vector

Description: Responsible for storing the data of nodes and relationships that compose a vector.

Responsibilities:

1. Knows vector name.
2. Knows vector description.
3. Records vector name.
4. Records vector description.
5. Add node to dictionary. (IDDict 1)
6. Remove node from dictionary. (IDDict 2)
7. Retrieve node from dictionary. (IDDict 3)
8. Retrieve all nodes from dictionary. (IDDict 4)
9. Add relationship to dictionary. (IDDict 1)
10. Remove relationship from dictionary. (IDDict 2)
11. Retrieve a relationship from dictionary. (IDDict 3)
12. Retrieve all relationships from dictionary. (IDDict 4)
13. Knows node property visibility flags.
14. Records node property visibility flags.
15. Saves itself to file.
16. Loads itself from file.

Collaborators:

- IDDict

Class: Relationship

Description: Knows the child and parent node IDs that constitute a given relationship in the system.

Responsibilities:

1. Knows parent node identification number.
2. Knows child node identification number.
3. Knows relationship label.
4. Knows relationship line coordinates.
5. Records parent node identification number.
6. Records child node identification number.
7. Records relationship label.
8. Records relationship line coordinates.

Collaborators:

Class: EnforcementActionReport

Description: Report that outlines various errors found during validation.

Responsibilities:

1. Knows errors found within log file.

Collaborators:

Class: ProjectMerge

Description: Handles the merging of analyst and lead changes.

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 9
-----	------------	--------------------------	-----------

1. Merges vector, node, and relationship data with stored vector, node, and relationship data.
(Vector 1-5, 8-9, 12; Node 1-9, 11-19; Relationship 1-8)

Collaborators:

Class: Validator

Description: Responsible for validating and cleansing the content of a user-provided files.

Responsibilities:

1. Cleanses TMUX log files for unwanted characters.
2. Cleanses log files of empty lines/rows.
3. Validates log files' timestamps. (Event 3-4)
4. Reports cleansing status result. (LogFile 4)
5. Reports validation status result. (LogFile 5)
6. Generates an enforcement action report. (LogFile 10)

Collaborators:

- Event
- LogFile

Class: Settings

Description: Responsible for housing global variables of a given event/session.

Responsibility:

1. Knows lead status check.
2. Knows host machine IP address.
3. Knows lead machine IP address.
4. Knows red team directory.
5. Knows blue team directory.
6. Knows white team directory.
7. Knows root directory.
8. Knows icon directory.
9. Records lead status check.
10. Records host machine IP address.
11. Records lead machine IP address.
12. Records red team directory.
13. Records blue team directory.
14. Records white team directory.
15. Records root directory.
16. Records icon directory.
17. Saves itself to file.
18. Loads itself from file.

Collaborators:

Class: ExportTable

Description: Responsible for the formatting of the log entry tables that compose the vectors of a given event into an exportable file.

Responsibilities:

1. Compiles the node and relationship table into a single, exportable file. (Vector 1-2, 8, 12; Node 1-9; Relationship 1-3)

Collaborators:

- Vector
- Node
- Relationship

CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 10
-----	------------	--------------------------	------------

Class: ExportGraph

Description: Responsible for the formatting of the final graph with its corresponding vectors into an exportable image file.

1. Renders an exportable image file of the Graph. (Graph 5-6)

Collaborators:

- Graph

Class: IDDict

Description: Knows all generic objects with a unique id.

Responsibilities:

1. Adds an entry to the dictionary.
2. Removes an entry from the dictionary.
3. Retrieves an entry from the dictionary.
4. Retrieves all entries from the dictionary.
5. Saves IDDict to file.
6. Loads IDDict from file.

Collaborators:

Class: ActiveVector

Description: Knows vector currently selected.

Responsibilities:

1. Knows active vector.
2. Knows active vector id.
3. Records active vector.
4. Records active vector id.

Collaborators:

Class: Sync

Description: Manage data transferal from lead and client.

Responsibilities:

1. Pushes client changes to lead. (Settings 3)
2. Pulls lead changes to clients. (Settings 3)
3. Queues push requests from clients.
4. Removes push request from queue.

Collaborators:

- Settings

Class: SplunkManager

Description: Interface between Splunk and the system to submit log files and retrieve log entries.

Responsibilities:

1. Sends files to Splunk.
2. Retrieves parsed log entries.

Collaborators:

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CRC	Keikaku 企画	Date 3/8/2020 8:00 PM	Page 11
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