DECODER: a new DevOps toolbox for software code exploration and analysis

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DEveloper COmpanion for Documented and annotated code

Project at a glance

- [Project Link](https://www.decoder-project.eu/)
- Started in January 2019, for 36 months
- Provide a unified platform for managing all kinds of information on a given codebase.
- Target all stakeholders in software development life cycle:
  - developers
  - reviewers
  - maintainers

Coordination: TECHNIKON

Use-cases Methodology UX

Natural Language Processing

Software Engineering Tools
Database storing all relevant documents for a software project
- documentation (manuals, comments, bug tracker, ...)
- formal specifications
- source code
- analysis and testing results
- and evolutions (e.g. commits)

Tools for feeding the database
Tools for querying the database
Common Json schema to ease interactions
PKM Architecture

- Use docker containers
- REST server uses OpenAPI
- AGPL and Apache licenses
- https://gitlab.ow2.org/decoder/pkm-api

Components:
- PKM cli
- PKM util
- PKM core
- Bash scripts
- Node.js
- MongoDB driver
- PKM RESTful HTTP server

Connections:
- Over TCP
- Over https

User’s console, JS SDK, UI and tools
Natural Language Processing

- Knowledge extraction from informal documents and correspondance with relevant code pieces
- Knowledge extraction from code and semi-automated documentation generation
Abstract Semi-Formal Models

At a glance

- Graphical language to describe effects of a function on the data structures involved
- Semi-automated generation of ASFM diagrams
- Animation of the diagrams (graphical debugging)

Current status

- Common part understood by all tools
- Extensible with tool-specific content
- Provide an abstraction layer on top of PKM’s lower-level documents
- Conversion tools to ASFM (doc-to-asfm) available as prototypes
Decoder Front-end

- browser-based
- under heavy development
- basic support for the main tools feeding the PKM
Next steps

Beta-testing PKM Server

▶ Internally
  ▶ Add functionalities to the API
  ▶ Integrate more tools (NLP)
  ▶ Continue client development

▶ Externally
  ▶ Interface with existing tools (e.g. THEIA)
  ▶ Export standard queries (e.g. LSP) where possible

▶ Use ReachOut!
  ▶ first beta campaign on doc-to-asfm for the end of the year
  ▶ beta-campaign for the whole PKM stack in 2021

https://www.reachout-project.eu/
Contacts

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