

PHUSE US Connect 2026 SM 13

AI supported validation of open-source software

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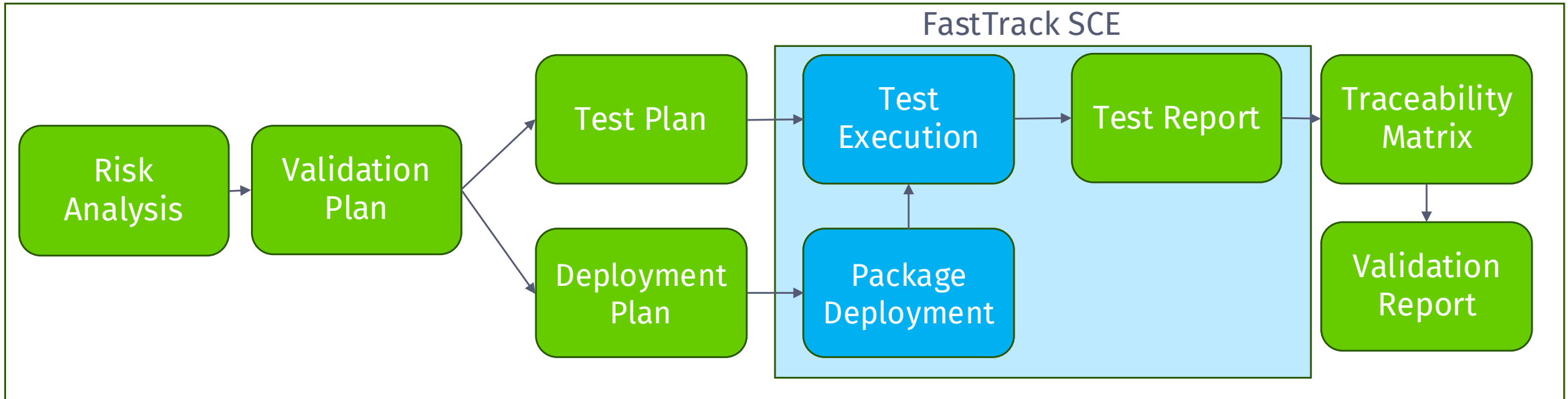
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Automated Validation Process

ValoRpacks



Document

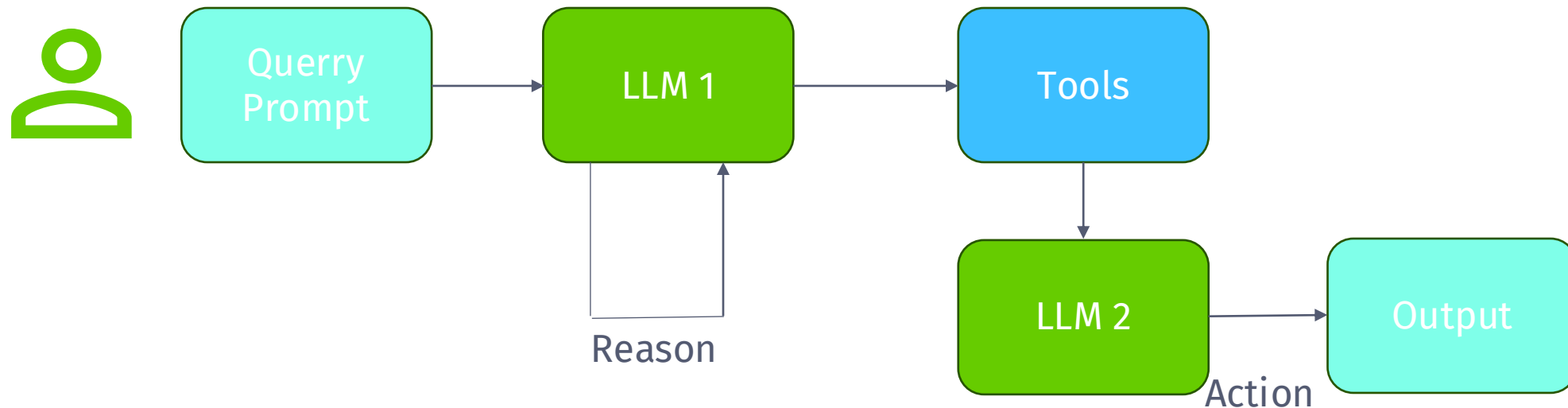
SCE

R Program

- Documents and their creation dependencies
- Secured Statistical Computing Environment
- Automatic execution of R Programs

Agent AI - React Agent

- LLM1: Reasoning engine, choose tools, decide next steps
- Tools: External resources, web search, databases, calculators or APIs
- LLM2: Action engine perform task (e.g. perform web search)

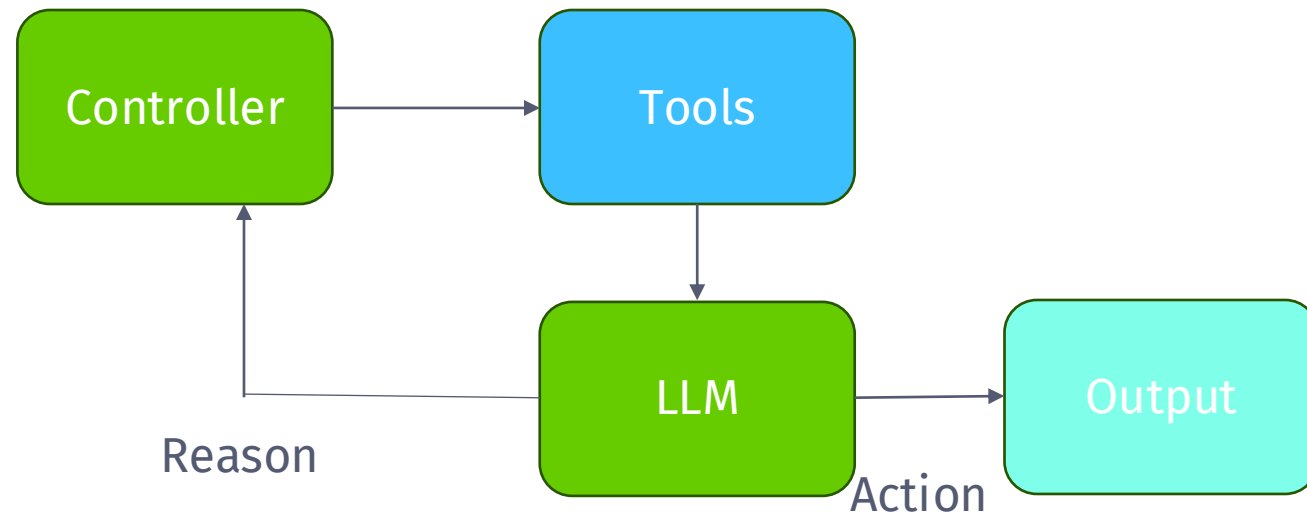


Modification of the Agent

- Automation requires AI without human interaction
- React Agents require powerful LLMs
- For formal validation and R Packages high quality information and are available without AI and can be used to reduce the prompting efforts of the react agent.

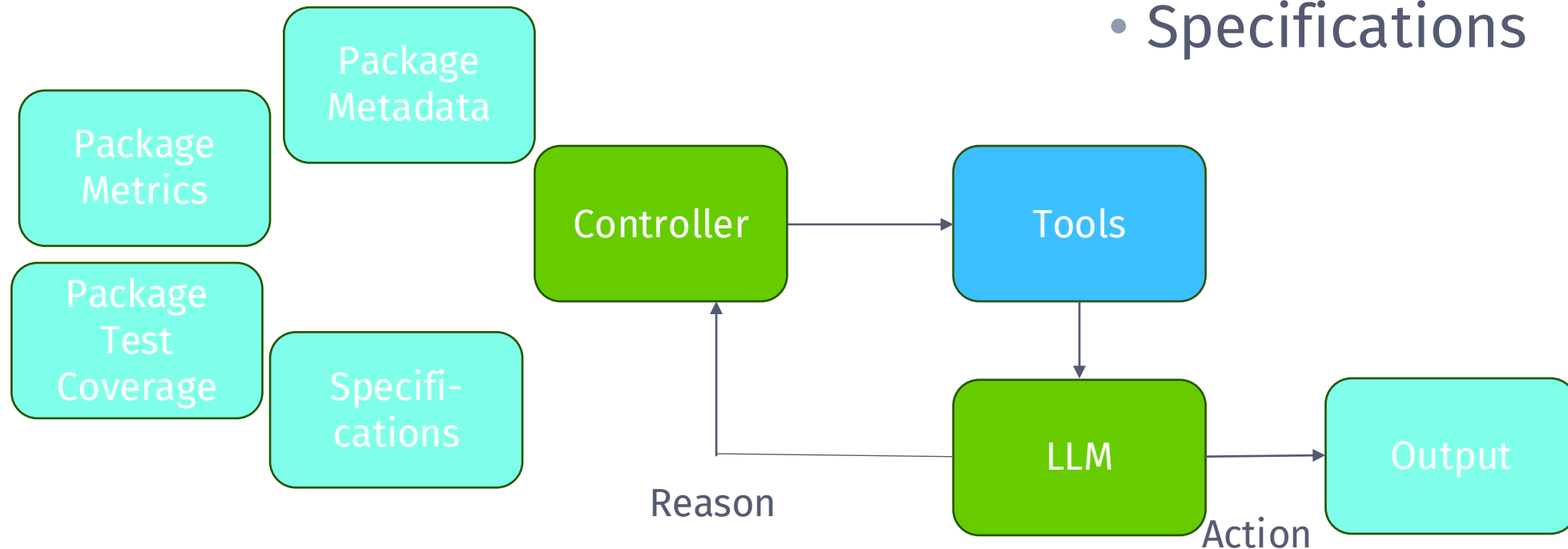
Agent AI – Modified React Agent

- Controller: Algorithm determining the next steps and using tools to prompt an LLM to produce the desired output
- Tools: R and statistics-based external resources, web search, databases, Tools, Zoekt, ...
- LLM: Action engine performs tasks



Agent AI – Modified React Agent Initial Analysis Input

- Package Metadata
- Package Metrics
- Package Test Coverage
- Specifications



Open-Source R Tools in Use

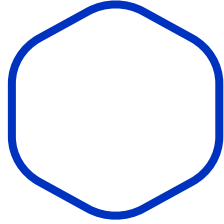
- Package Metadata
 - pkdown
 - roxygen
- Package Metrics
 - commits
 - releases
 - downloads
 - bugs
- Package Test Coverage
 - covtracer

Limitations

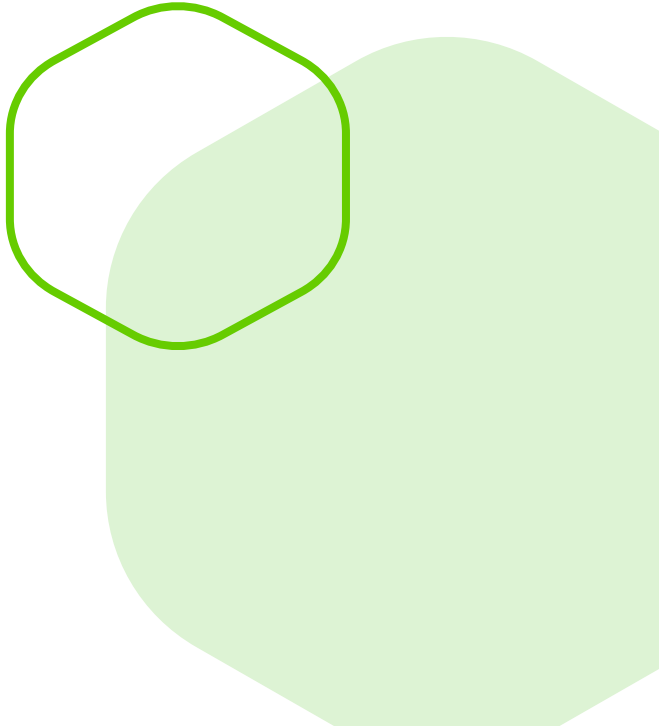
- Human review and approval for the risk assessment and specification are still needed.
- The execution of the process needs a controlled environment.

Conclusion

- The AI capabilities open new possibilities of automation because of interpreting Human language input and producing natural language texts.
- Using React Agents in combination with algorithms and existing R tools enables a fully automated validation workflow.
- And enables ValoRpacks to offer a unique, automated approach to master the validation of R packages.



Q&A



Thank you