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Asking “What?”, Automating the “How?”:

The Vision of Declarative Performance Engineering

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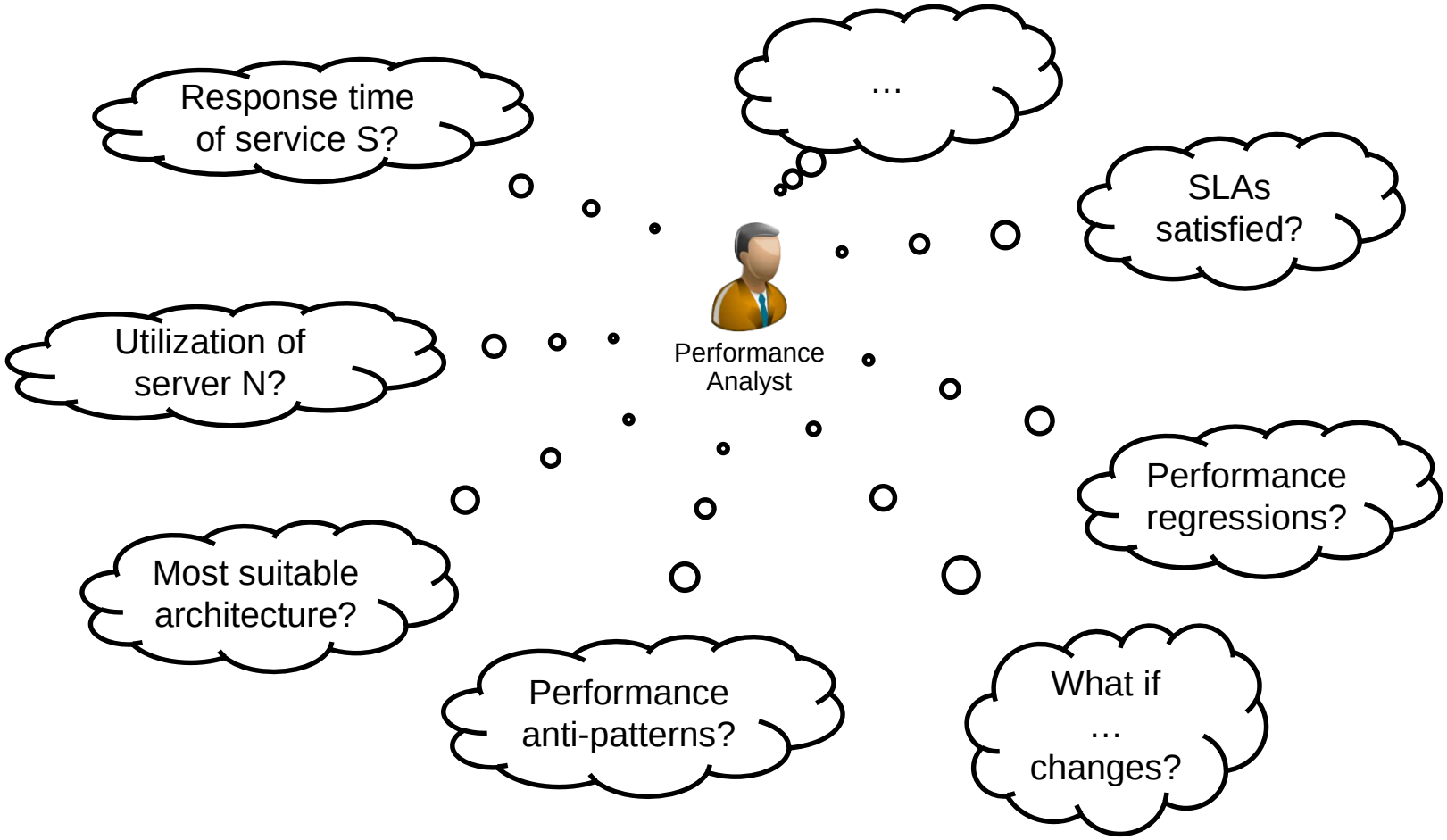
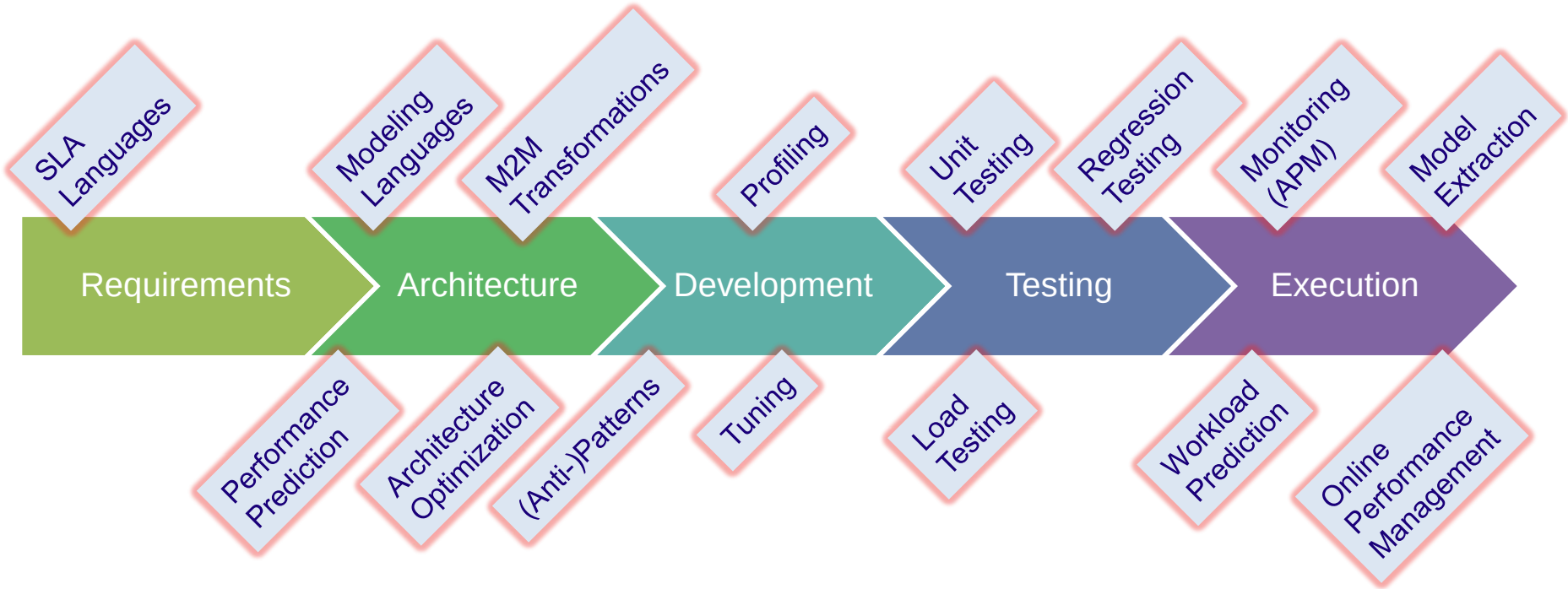
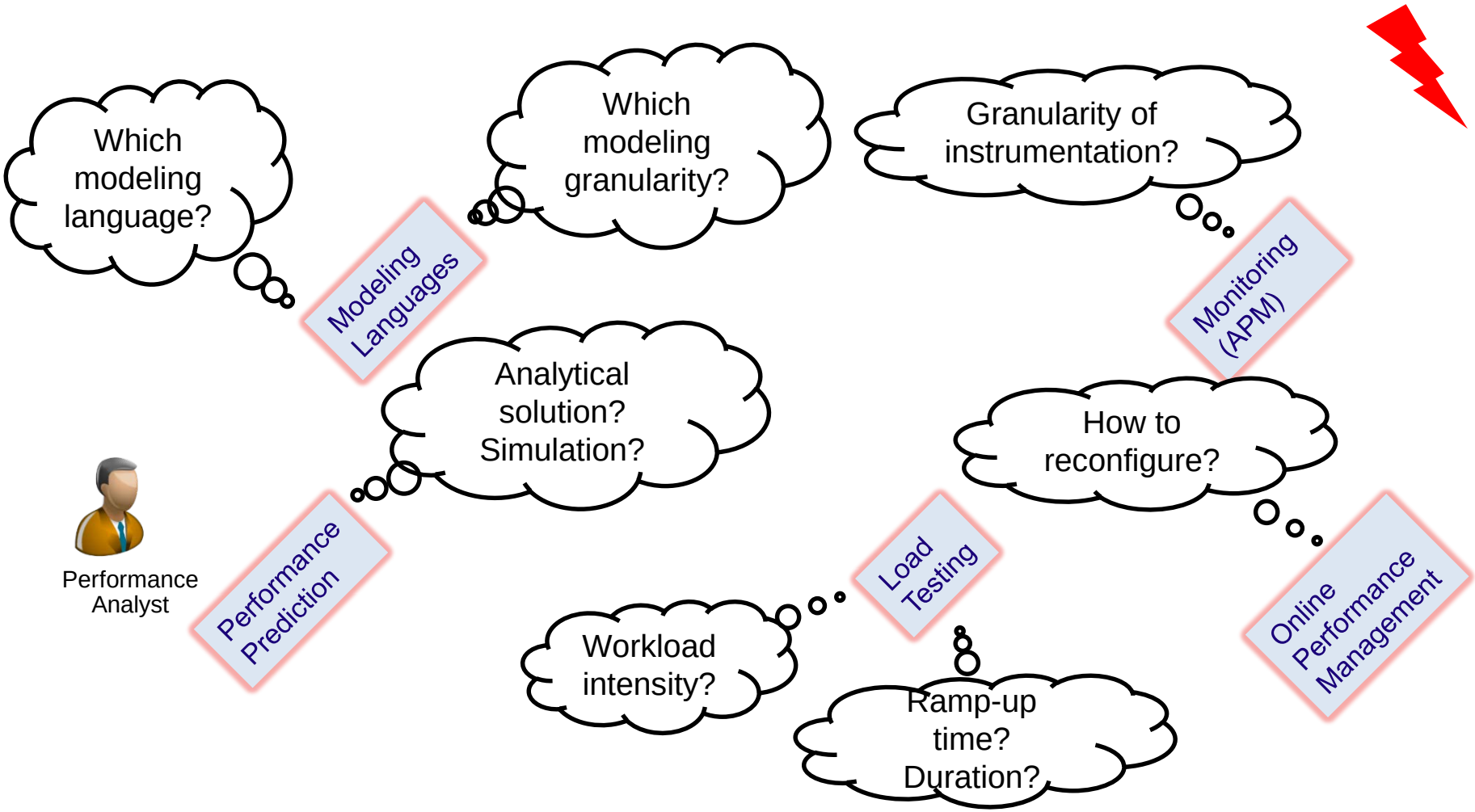
Performance-Relevant Concerns Spanning the Software Lifecycle



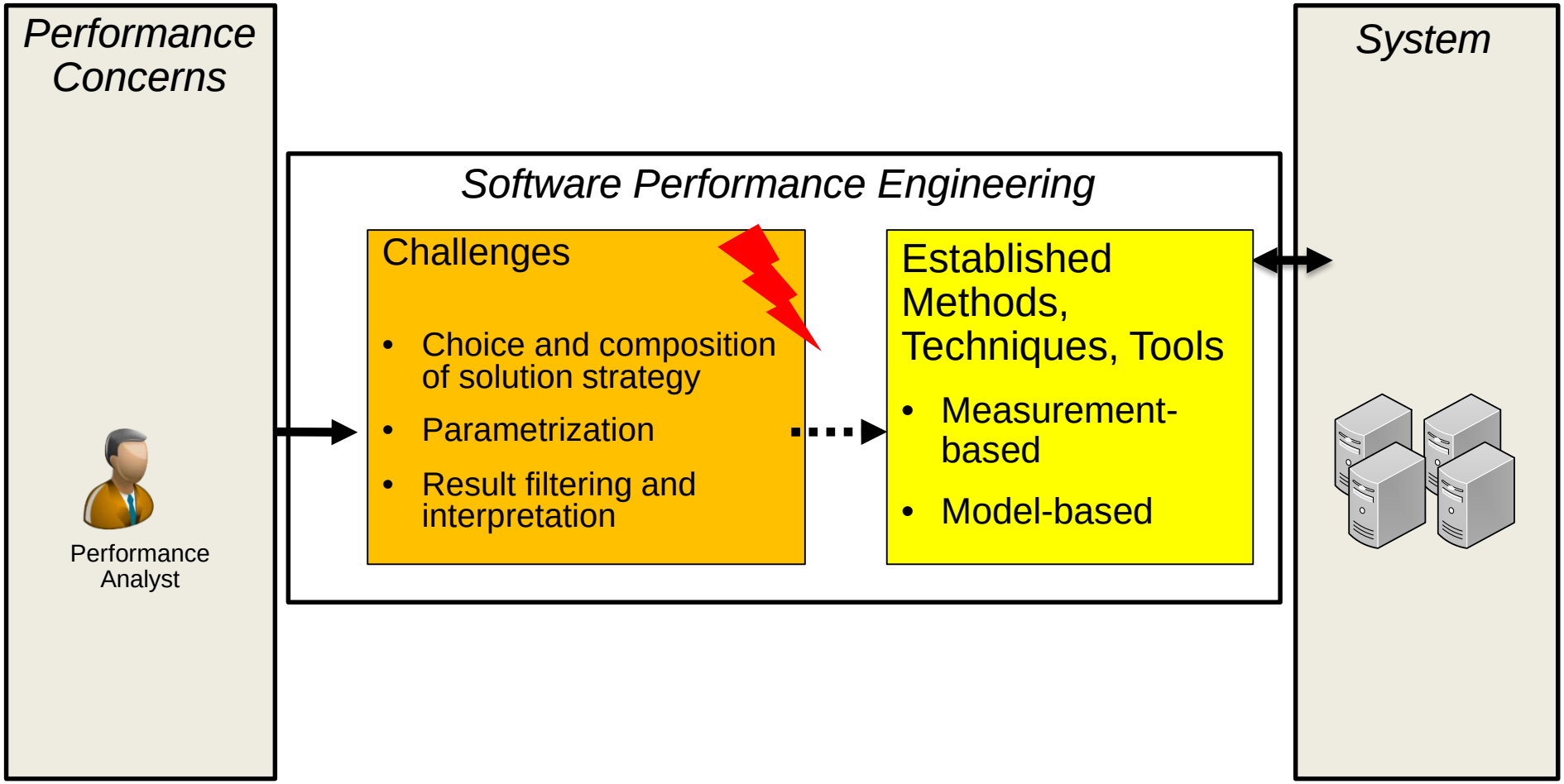
Extensive Body of Software Performance Engineering Exists



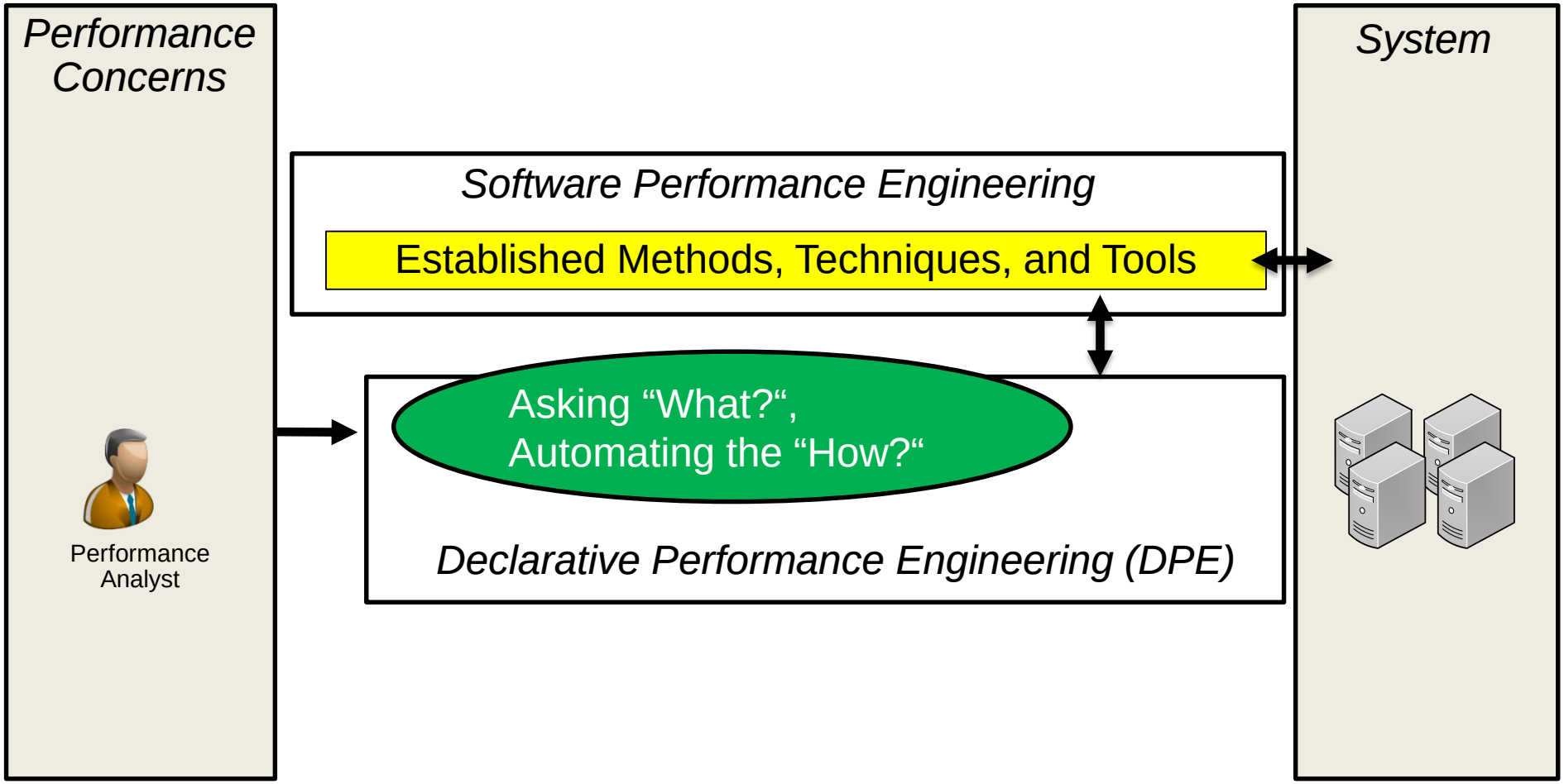
Problem Statement: Various Decisions to Apply SPE Correctly



Problem Statement: Various Decisions to Apply SPE Correctly



Vision: Declarative Performance Engineering

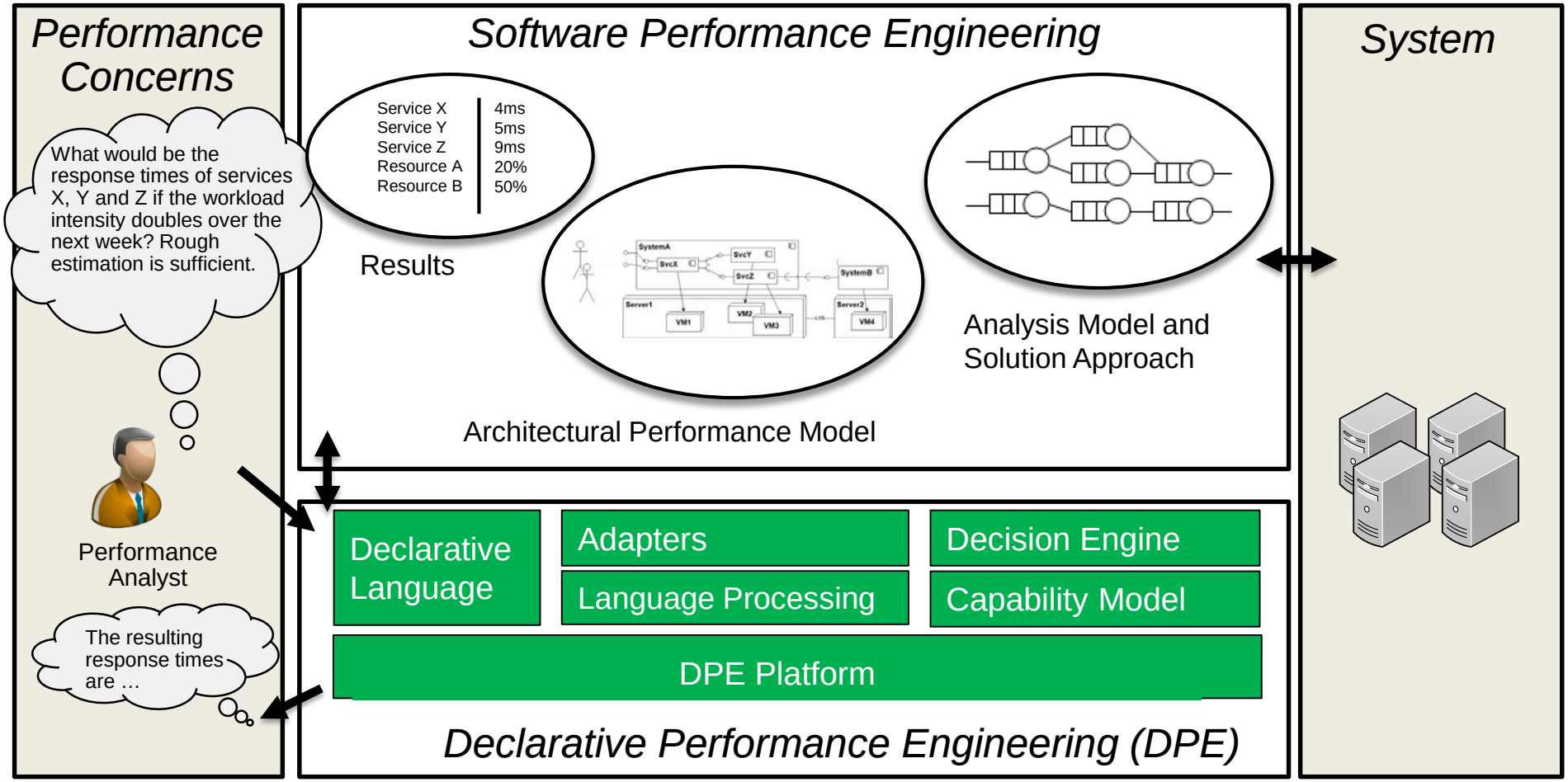


Declarative Performance Engineering

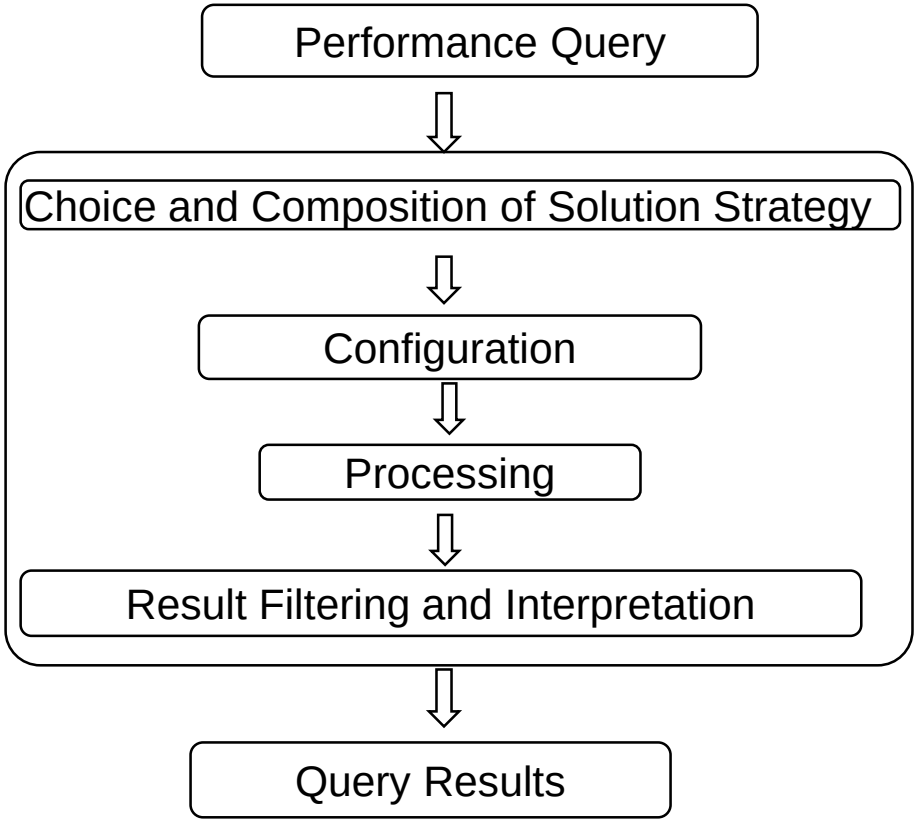
I say/define **what** i want to know,

the **how** will be automatically derived from what

Vision: Declarative Performance Engineering



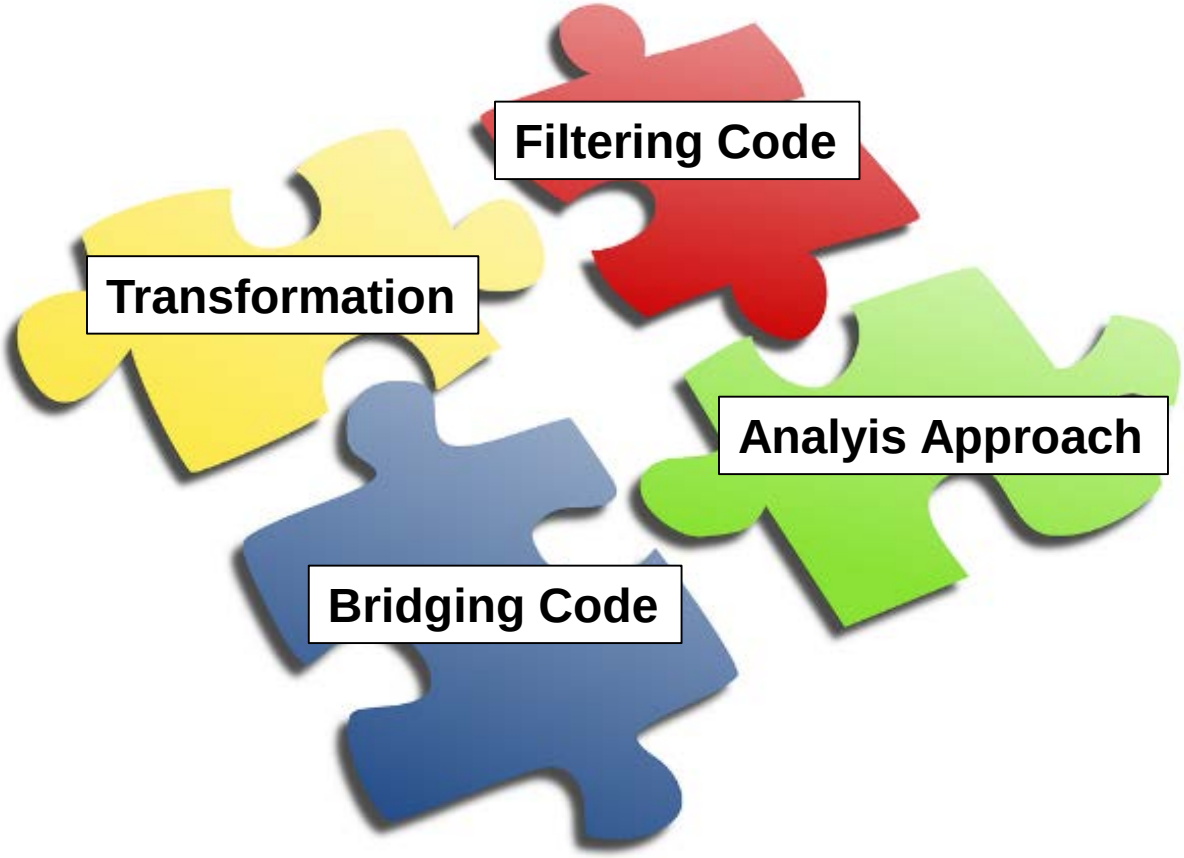
Query Answering Process



Note: Arrows depict dependencies or drives but do not imply strict ordering

Composition of Solution Strategies

Solution Strategy Expert



A **Solution Strategy Expert** choses and composes model transformations and solution approaches to solve a query

- Receipts can be **formalized, implemented and reused** if solution strategy is based on meta-model ➔ Solution Approach Adapters

Need for Solution Strategy Comparison

Solution Strategy Expert

➔ **Many possible solution strategies** for one query
- differ in speed, accuracy and provided statistic type
- Soultion strategies may only be able to answer a subset of questions

➔ **Need for comparison** of different solution strategies

➔ A **decision engine** may chose a suitable solution strategy based on a set of solution stratgies

Conclusion

I say **what** i want to know,

the **how** will be automatically derived from what

Questions?

Thank you for your attention

See you at the poster session!

Some Preliminary Work 1

- Brosig, F., Meier, P., Becker, S., Koziolek, A., Koziolek, H., Kounev, S. **Quantitative Evaluation of Model-Driven Performance Analysis and Simulation of Component-based Architectures**. *IEEE Transactions on Software Engineering (TSE)*, 41(2):157-175, 2015.
- Brunnert, A., van Hoorn, A., Willnecker, F., Danciu, A., Hasselbring, W., Heger, C., Herbst, N., Jamshidi, P., Jung, R., von Kistowski, J., Koziolek, A., Kroß, J., Spinner, S., Vögele, C., Walter, J., and Wert, A. (2015) **Performance-oriented DevOps: A Research Agenda.** Technical Reports of the SPEC Research Group, SPEC-RG-2015-01.
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- Gorsler, F., Brosig, F., and Kounev, S.. **Performance Queries for Architecture-Level Performance Models**. In Proc. 5th ACM/SPEC International Conference on Performance Engineering (ICPE 2014).

Some Preliminary Work 2

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- van Hoorn, A., Vögele, C., Schulz, E., Hasselbring, W., and Krcmar, H. **Automatic Extraction of Probabilistic Workload Specifications for Load Testing Session-Based Application Systems**. In Proc. 8th International Conference on Performance Evaluation Methodologies and Tools (ValueTools 2014), pages 139–146, 2014.
- van Hoorn, A., Waller, J., and Hasselbring, W. Kieker: **A Framework for Application Performance Monitoring and Dynamic Software Analysis.** In Proc. 3rd ACM/SPEC International Conference on Performance Engineering (ICPE ’12), pages 247–248. 2012.
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- Vögele, C., van Hoorn, A., and Krcmar, H. **Automatic Extraction of Session-Based Workload Specifications for Architecture-Level Performance Models.** In Proc. 4th International Workshop on Large-Scale Testing (LT 2015) @ ACM/SPEC ICPE 2015.