



NEXT GENERATION OF REQUIREMENTS ENGINEERING

28TH INTERNATIONAL WORKING CONFERENCE - REFSQ 2022

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The total cost of poor automotive software quality (CPSQ) in United States in 2020 was...

\$2.08 trillion

Source: Consortium for Information & Software Quality (CISQ)





Imagining the day that the cost of poor automotive software quality is zero.

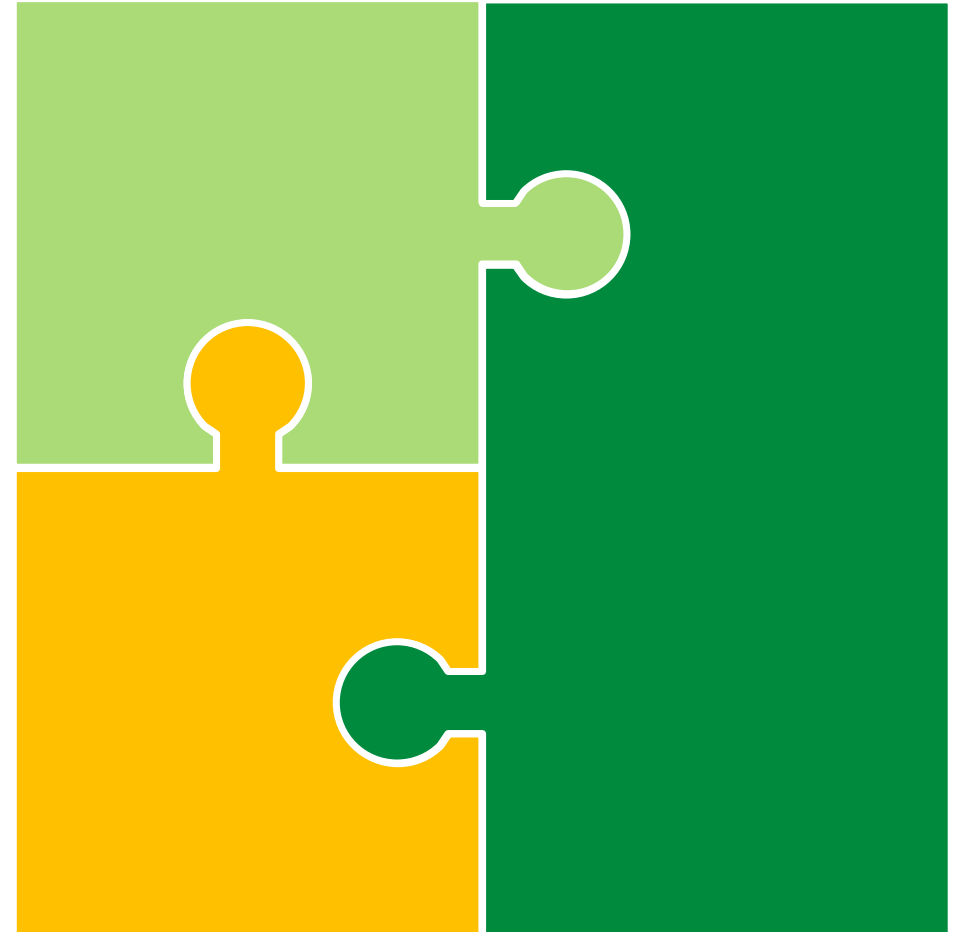
REQUIREMENTS ENGINEERING FOR SOFTWARE QUALITY

THREE KEY FOCUSED AREAS & SOLUTIONS



Key message

Show how key focused areas can be addressed using solutions that have been developed by solving problems working on **real challenges** rather than conceptual patterns



Next generation of Requirements Engineering must be transformed to meet future automotive needs

DELIVERING SOFTWARE QUALITY

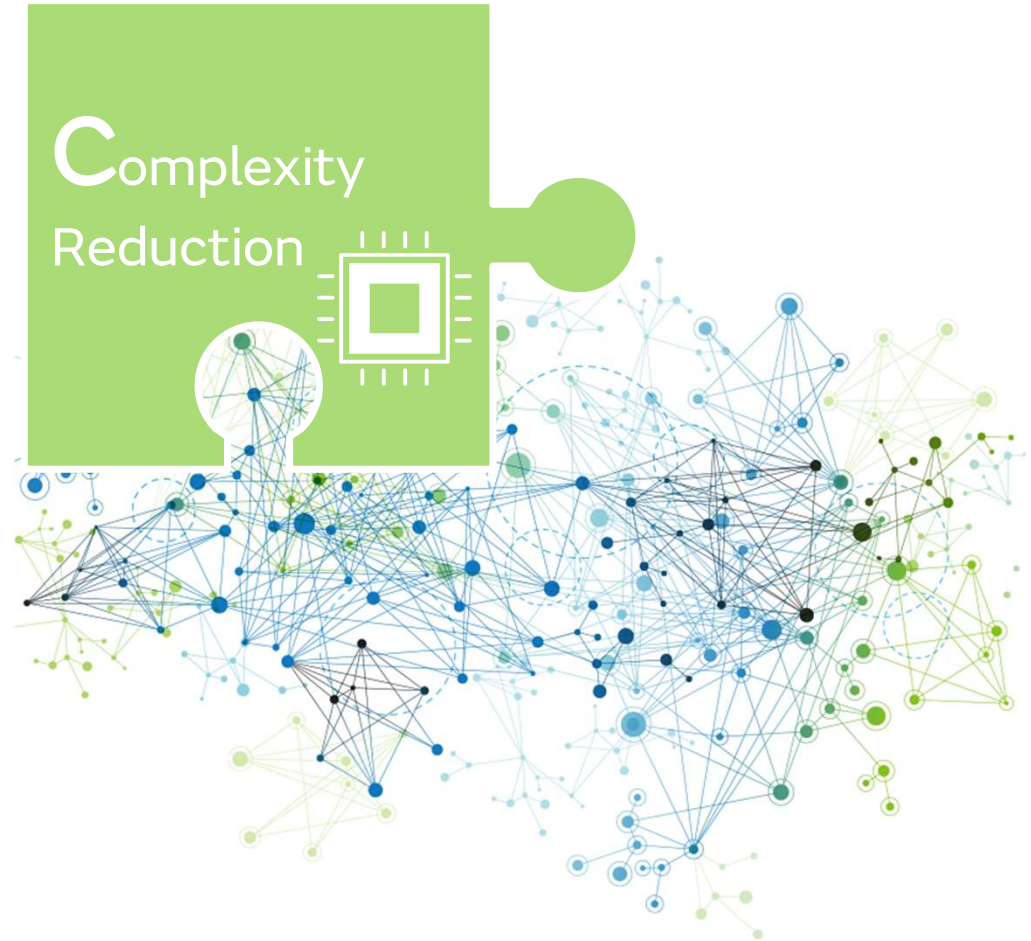
COMPLEXITY REDUCTION



How can we reduce complexity?

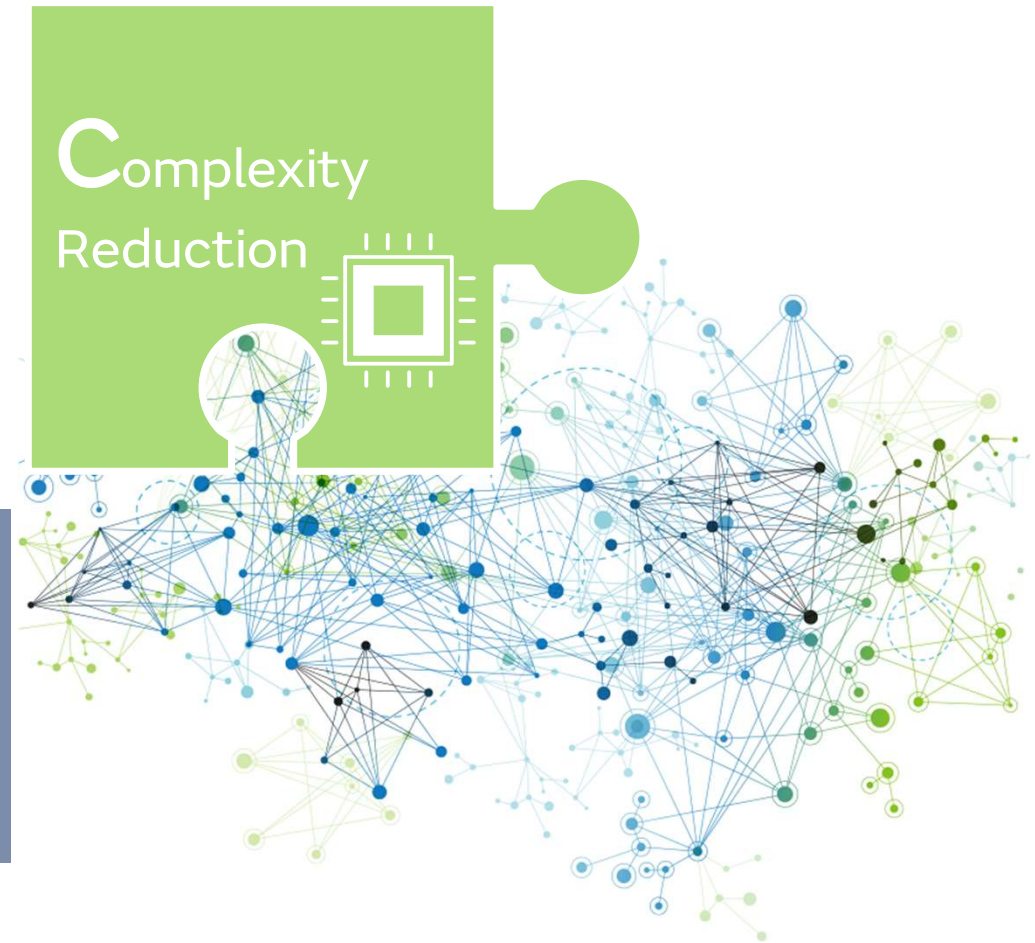
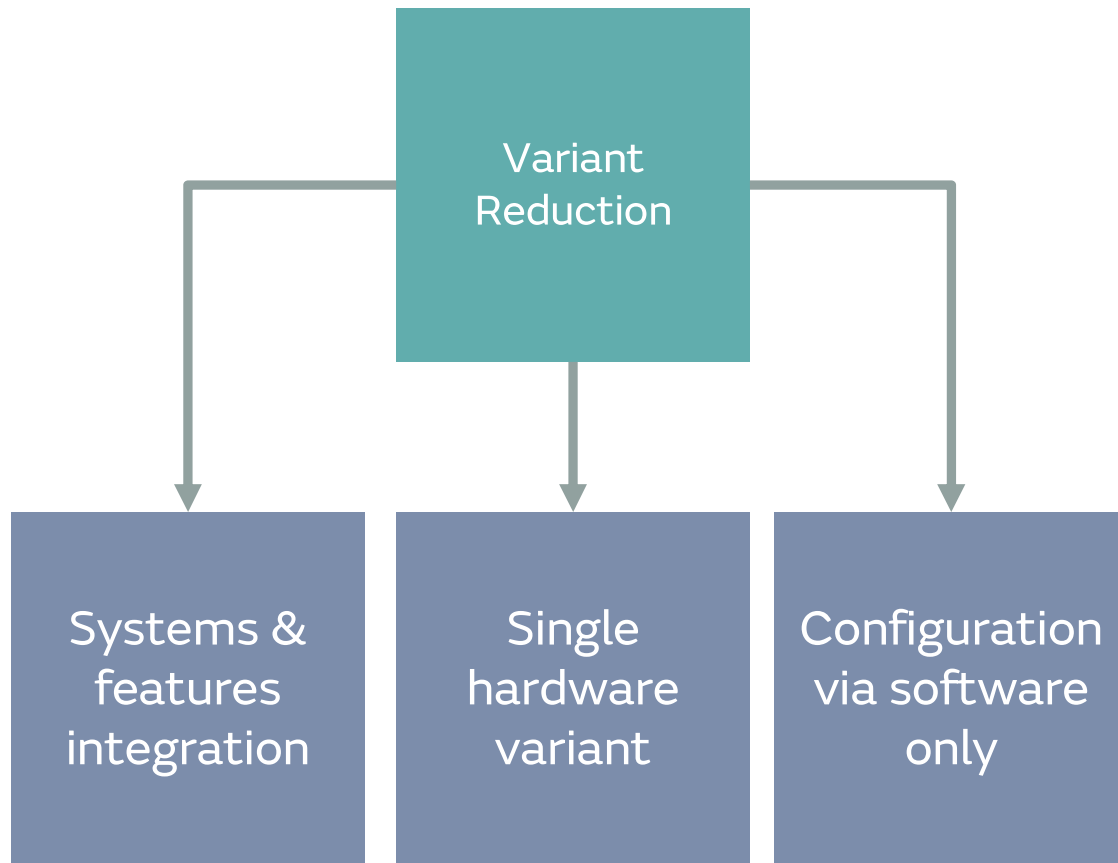
Variant
Reduction

Off-Cycle /
On-Cycle
Development



Complexity reduction has been an area of interest for many years with little progress made so far

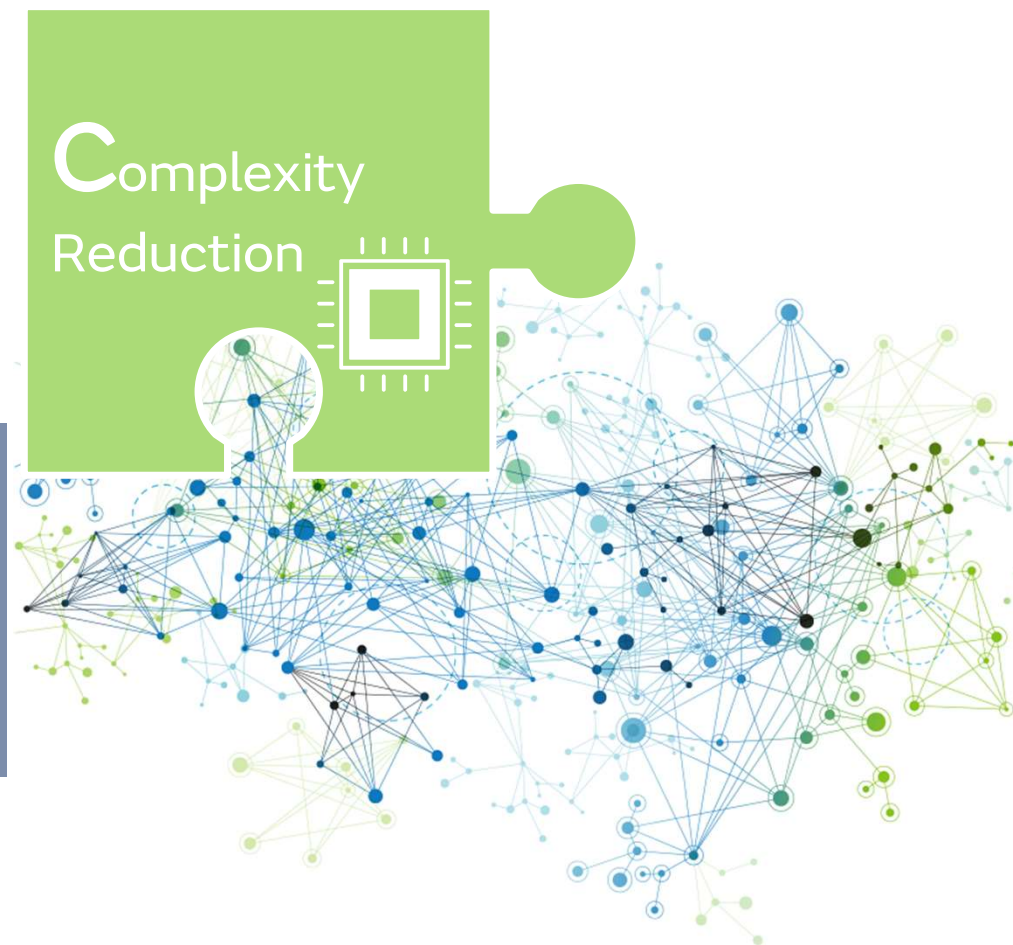
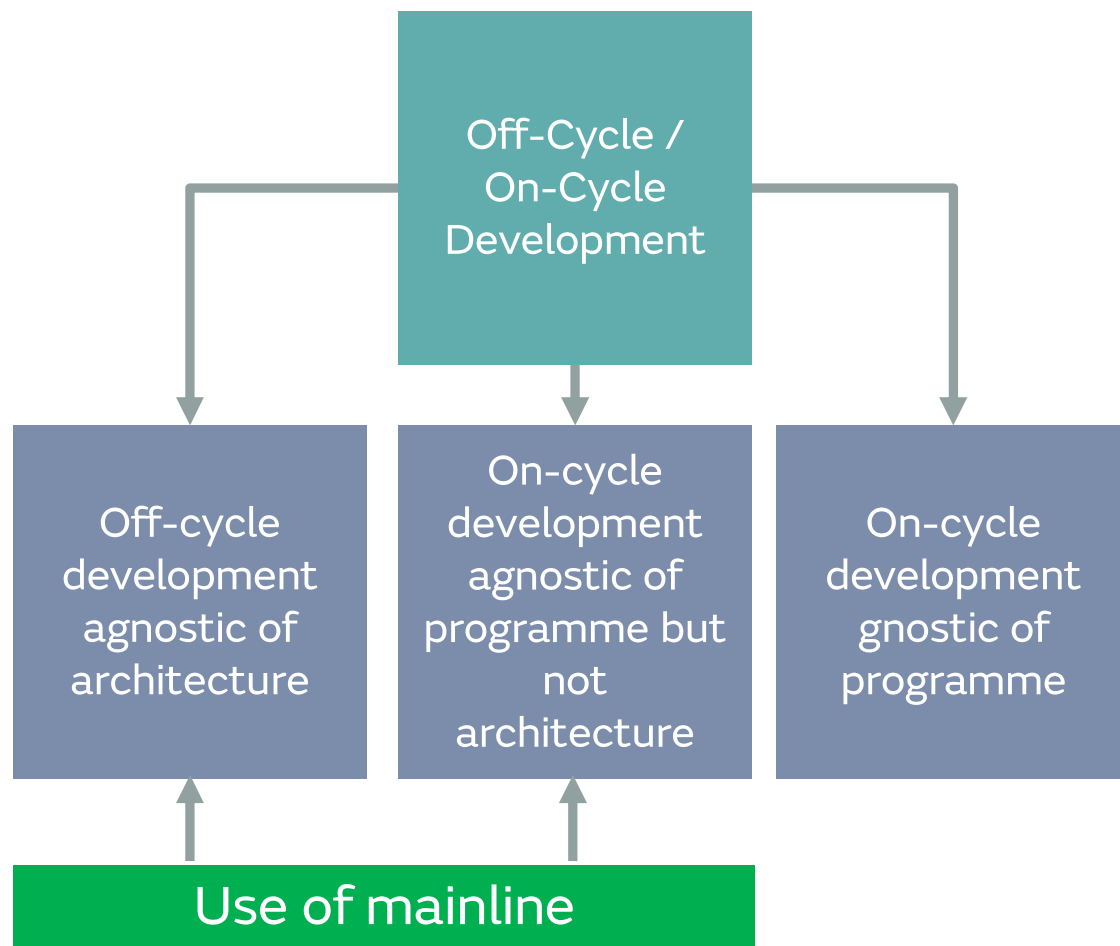
COMPLEXITY REDUCTION VARIANT MANAGEMENT



Variant reduction reduces interdependencies hence reducing design and validation efforts

COMPLEXITY REDUCTION

OFF-CYCLE vs ON-CYCLE DEVELOPMENT



Leveraging mainline and off-cycle development to speed up design re-use and reduce complexity

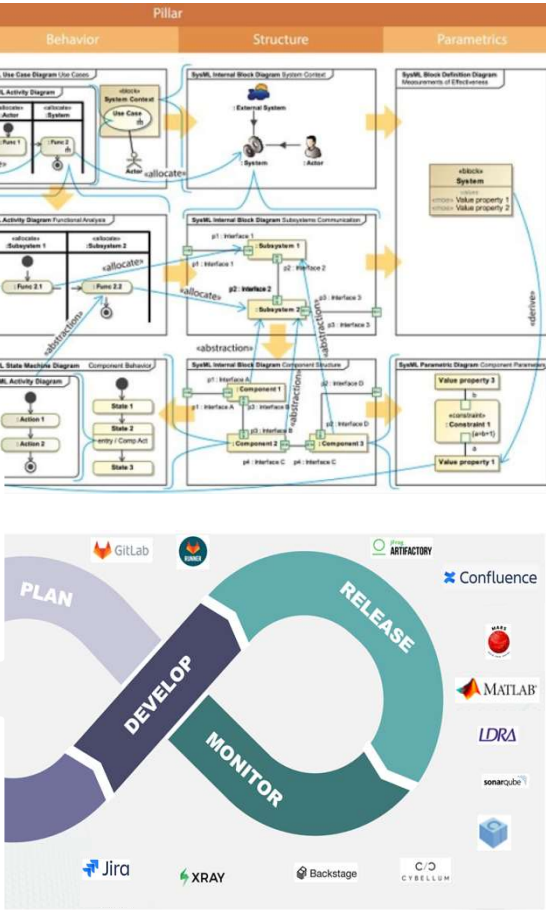
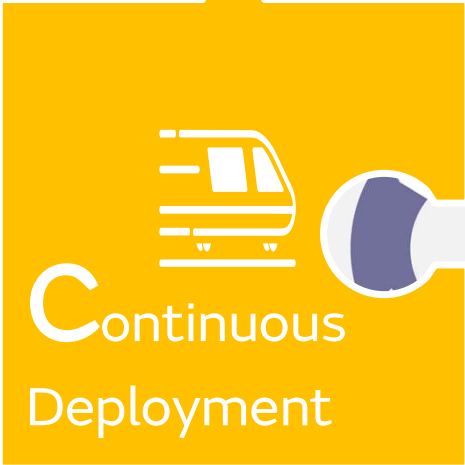
DELIVERING SOFTWARE QUALITY CONTINUOUS DEPLOYMENT



How can we achieve continuous deployment?

Full
MBSE & MBD
using Agile

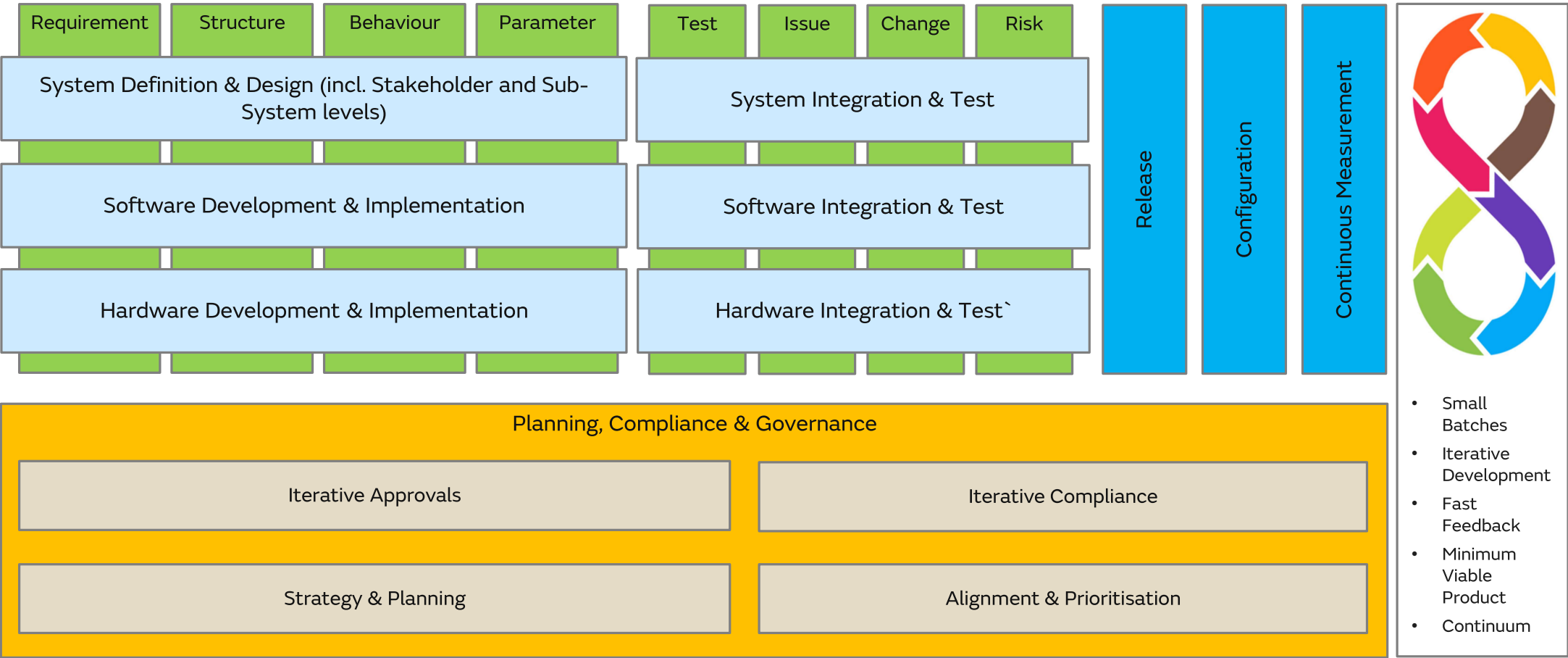
End2End
Automated
Pipelines



Better coverage, faster releases, scalability and team empowerment to retain and attract talent

CONTINUOUS DEPLOYMENT

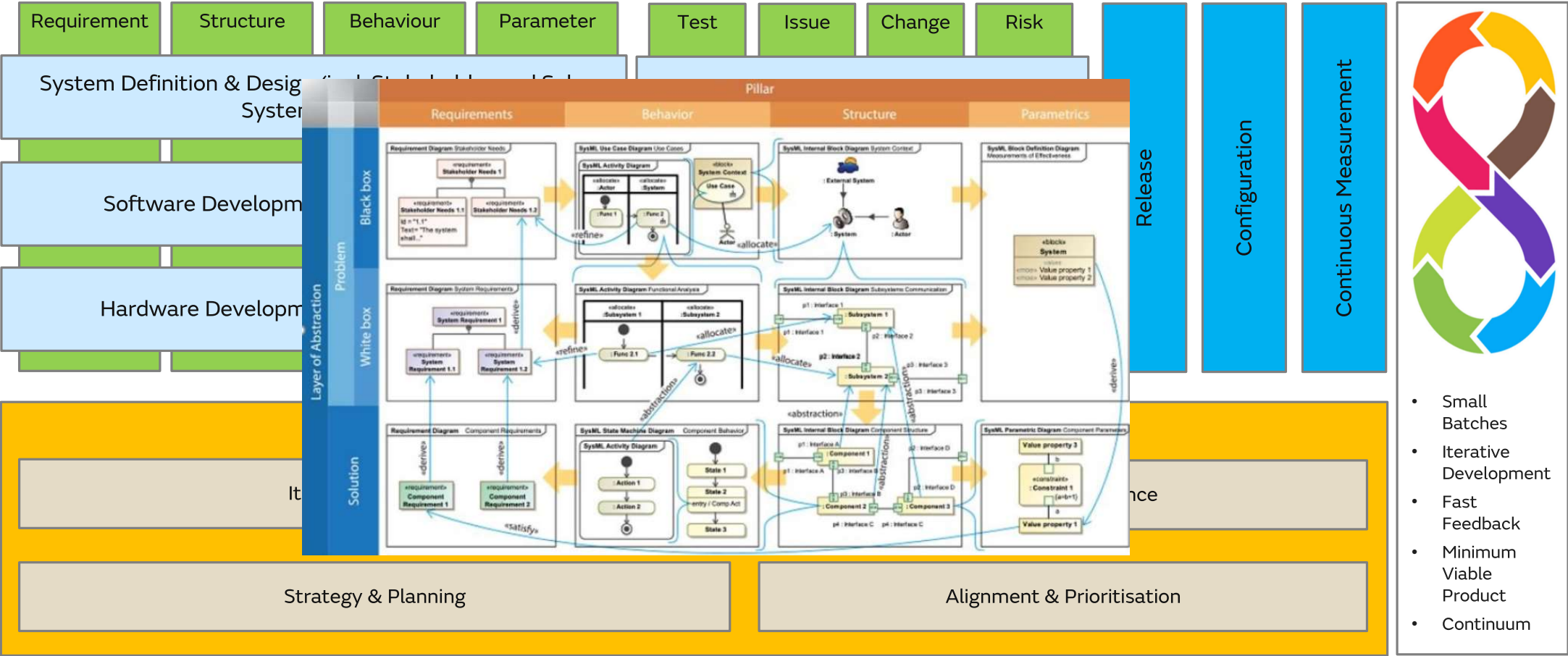
FULL MBSE/MBD & AUTOMATED PIPELINES



Requirements engineering in the context of the End2End product delivery and continuous measurement

CONTINUOUS DEPLOYMENT

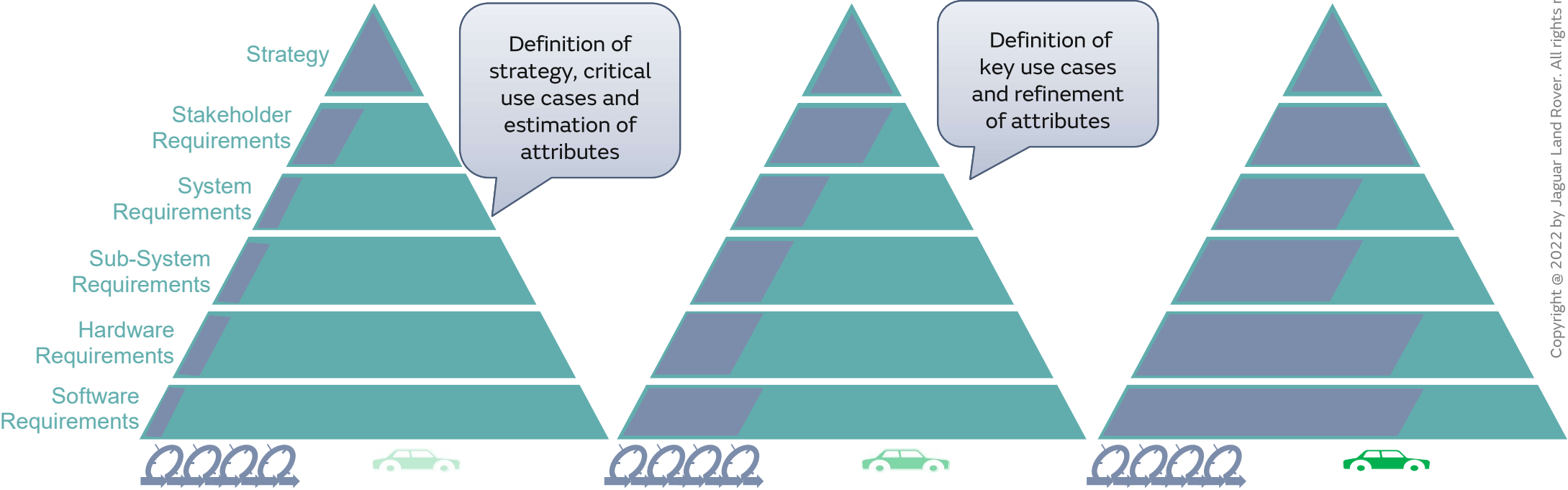
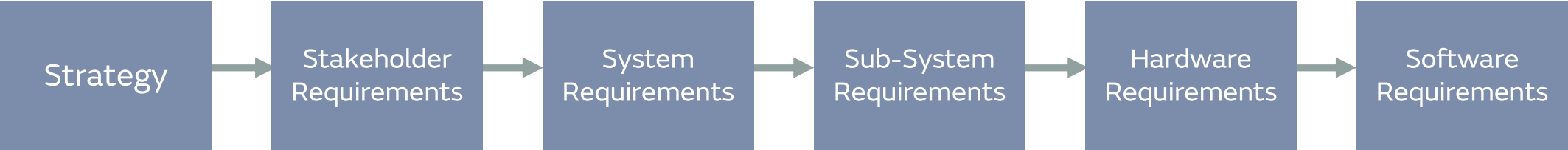
FULL MBSE/MBD & AUTOMATED PIPELINES



Requirements engineering in the context of the End2End product delivery operationalised by agile

CONTINUOUS DEPLOYMENT

FROM GATED DELIVERY TO PRIORITISED ENGINEERING



Requirements engineering operationalised by agile and delivery focused on business value

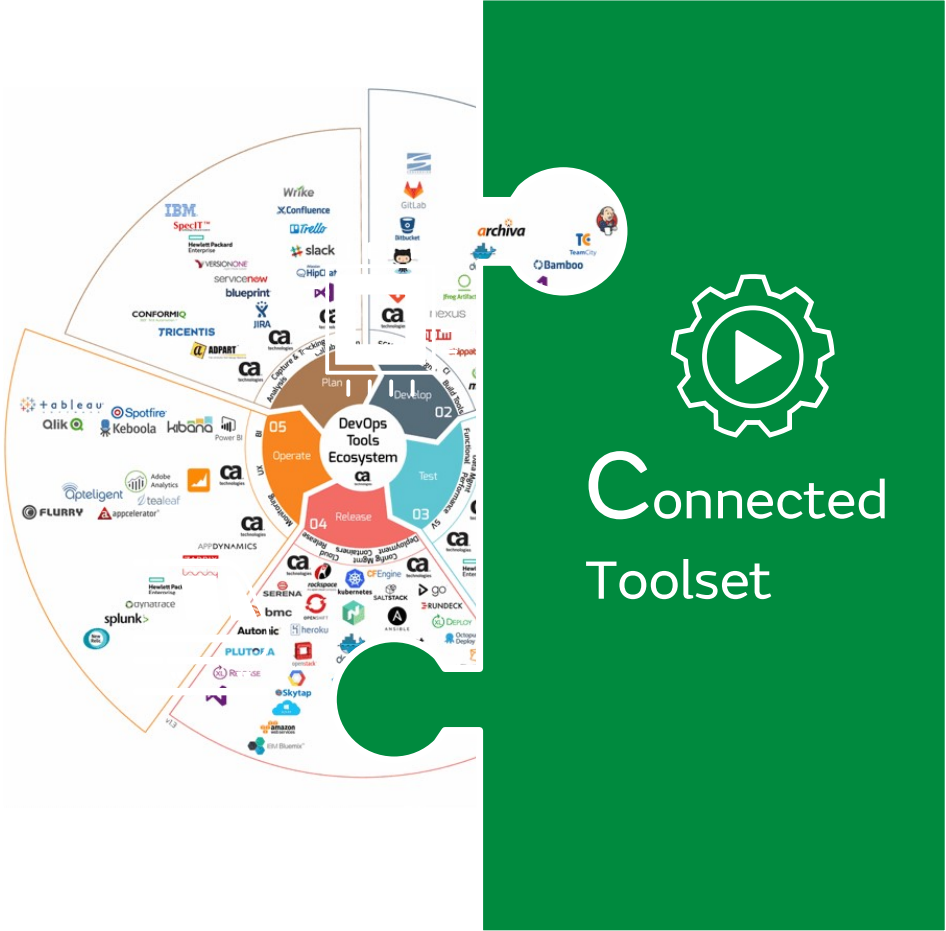
DELIVERING SOFTWARE QUALITY CONNECTED TOOLSET



What do we need from a connected toolset?

Traceable
Toolset

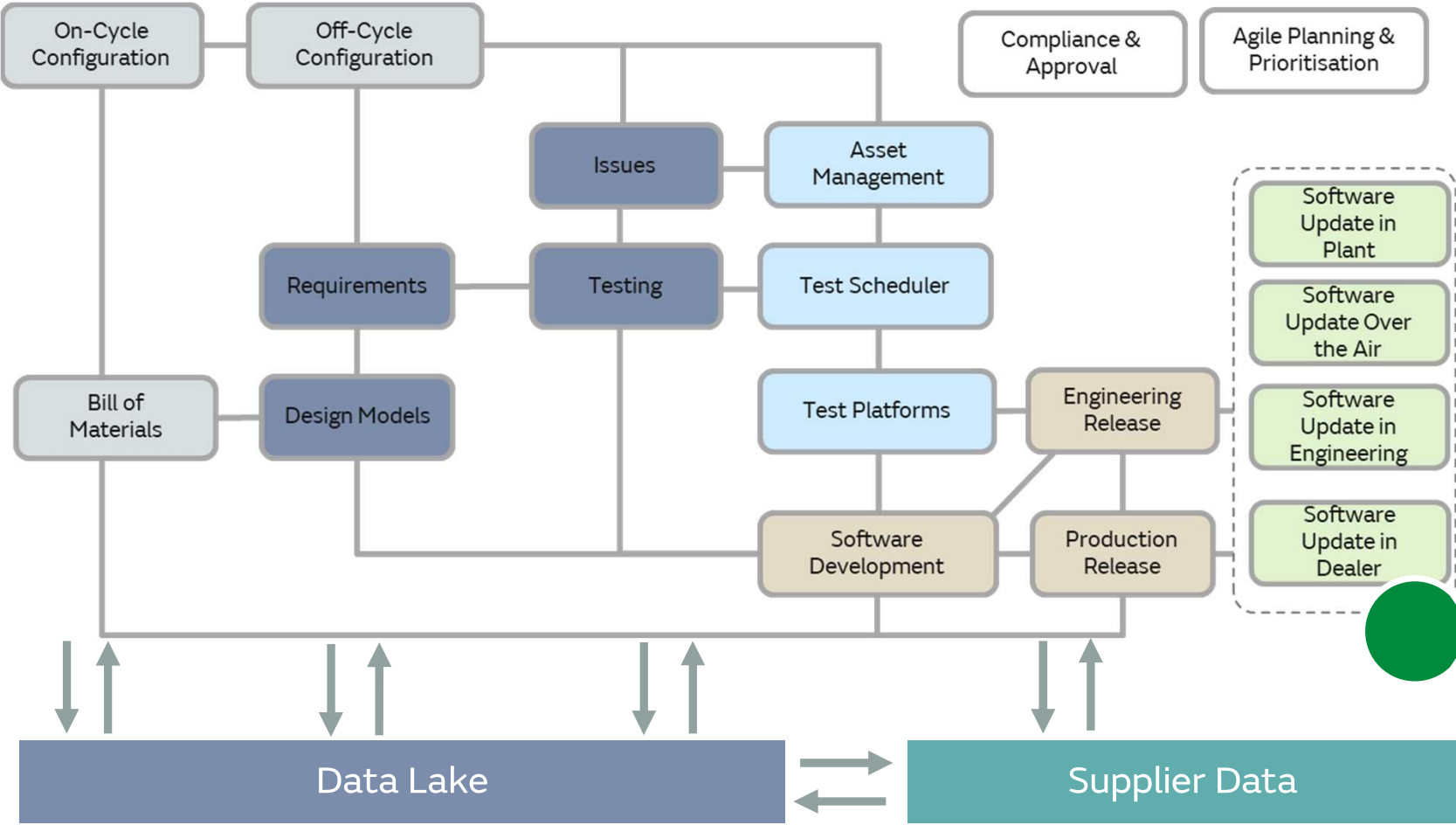
Integrated with
Data Lake



Removing duplication of data, increasing throughput and quality of product definition

CONNECTED TOOLSET

TRACEABILITY AND LINK TO DATA LAKE



Integrated and traceable engineering data enabling iterative development through fast change impact analysis

REQUIREMENTS ENGINEERING FOR SOFTWARE QUALITY

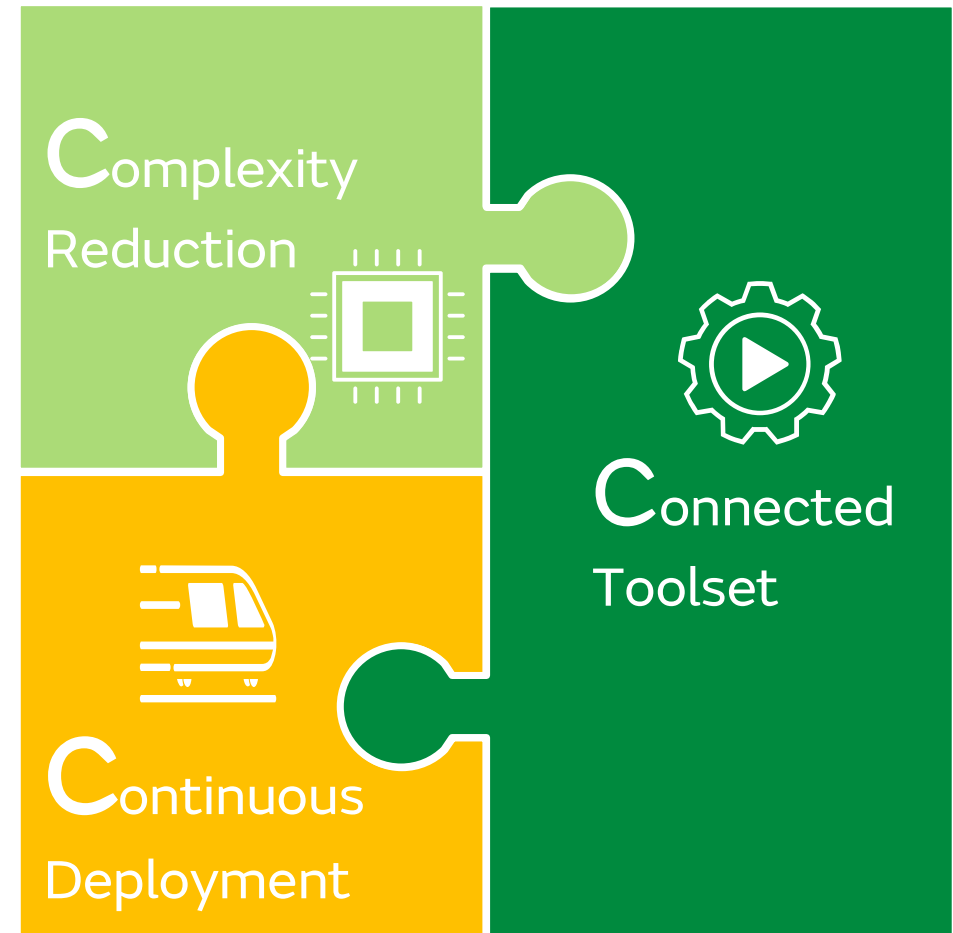
CONCLUDING REMARKS & NEXT STEPS



Real solutions presented for focused areas can be used to **improve software quality**

Software complexity will continue to increase together with **new regulations** coupled with **shorter development** times

Need to leverage **artificial intelligence**, **data science** and accelerate full **digital transformation**



Nothing of what has been said can be achieved without talented people and empowered teams



THANK YOU

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