

# Model Based Systems Engineering: Power of the Cluster

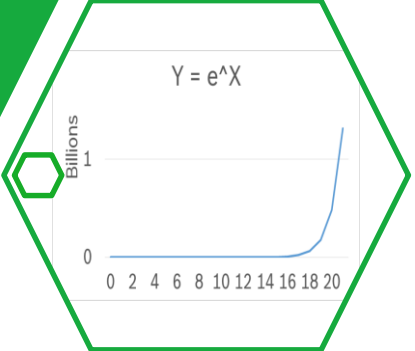
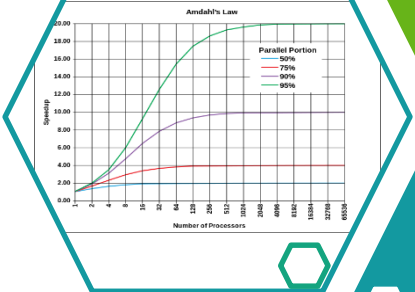
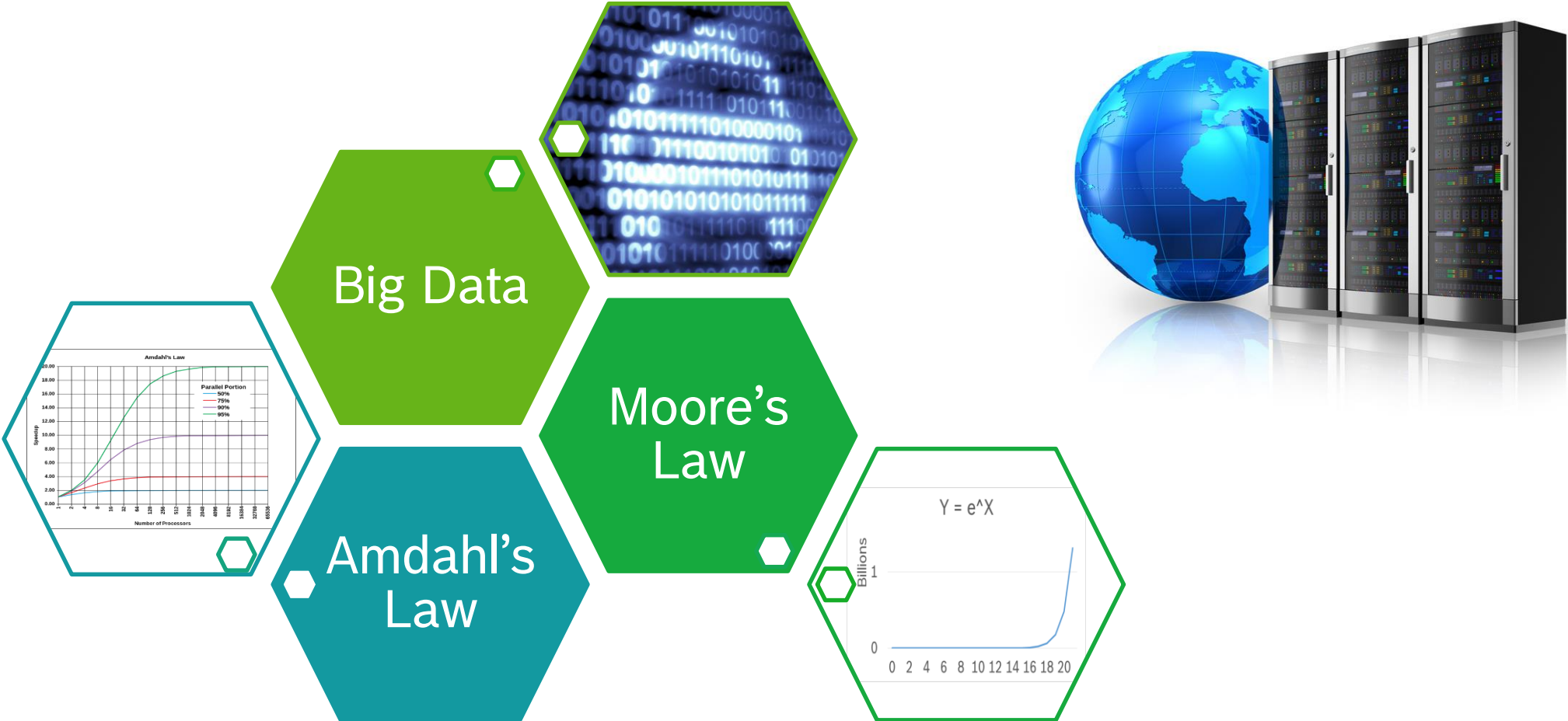


# Model Based Systems Engineering: Power of the Cluster Overview

- ▶ Introduction
- ▶ Design Challenge
- ▶ Investigation Approach
- ▶ Solution Using GT-SUITE
- ▶ Conclusions

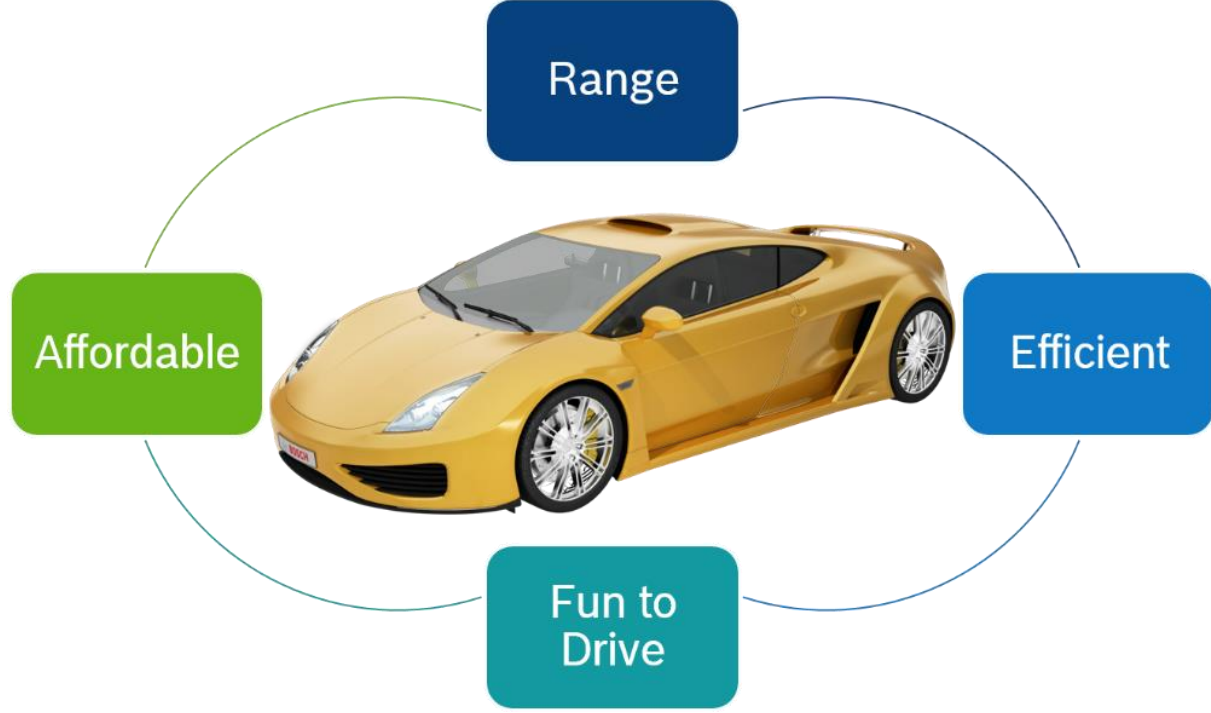
# Model Based Systems Engineering: Power of the Cluster

## Introduction



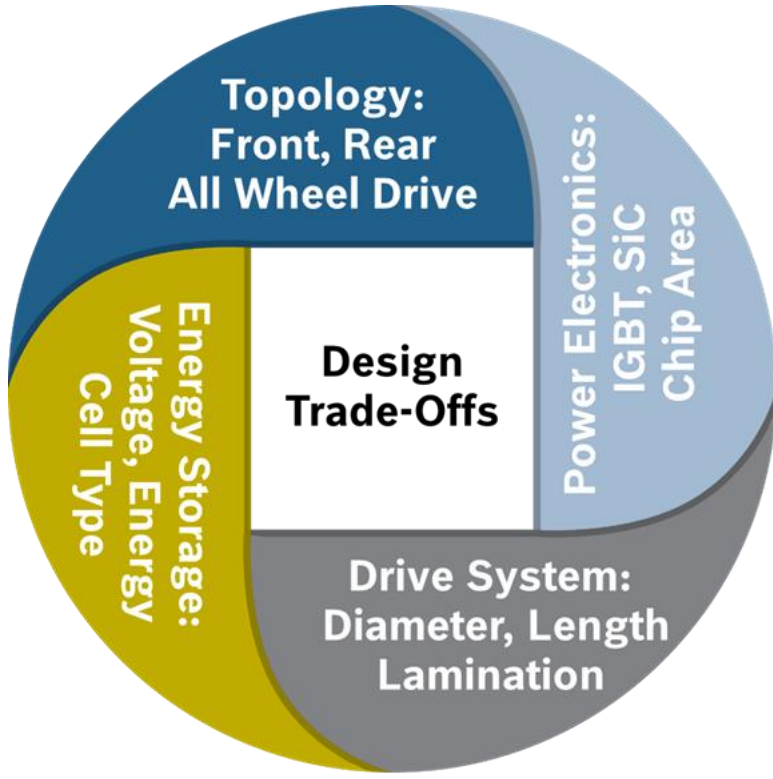
# Model Based Systems Engineering: Power of the Cluster Design Challenge

What does an EV Driver expect?



Competing drivetrain system interactions can only be resolved by a **model based** approach

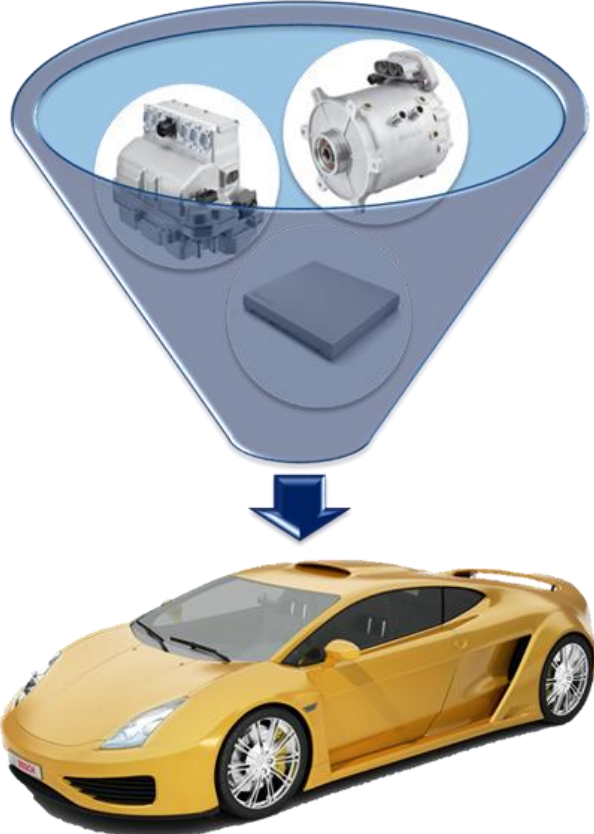
# Model Based Systems Engineering: Power of the Cluster Design Challenge



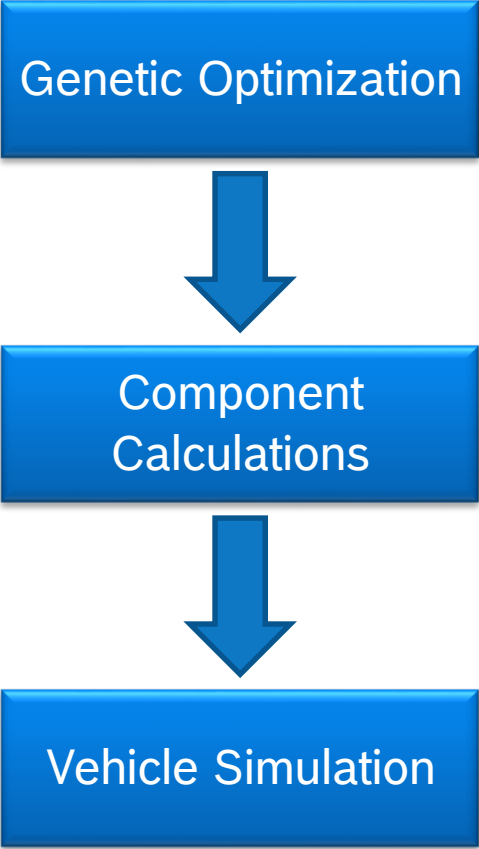
Competing drivetrain system interactions can only be resolved by a **model based** approach



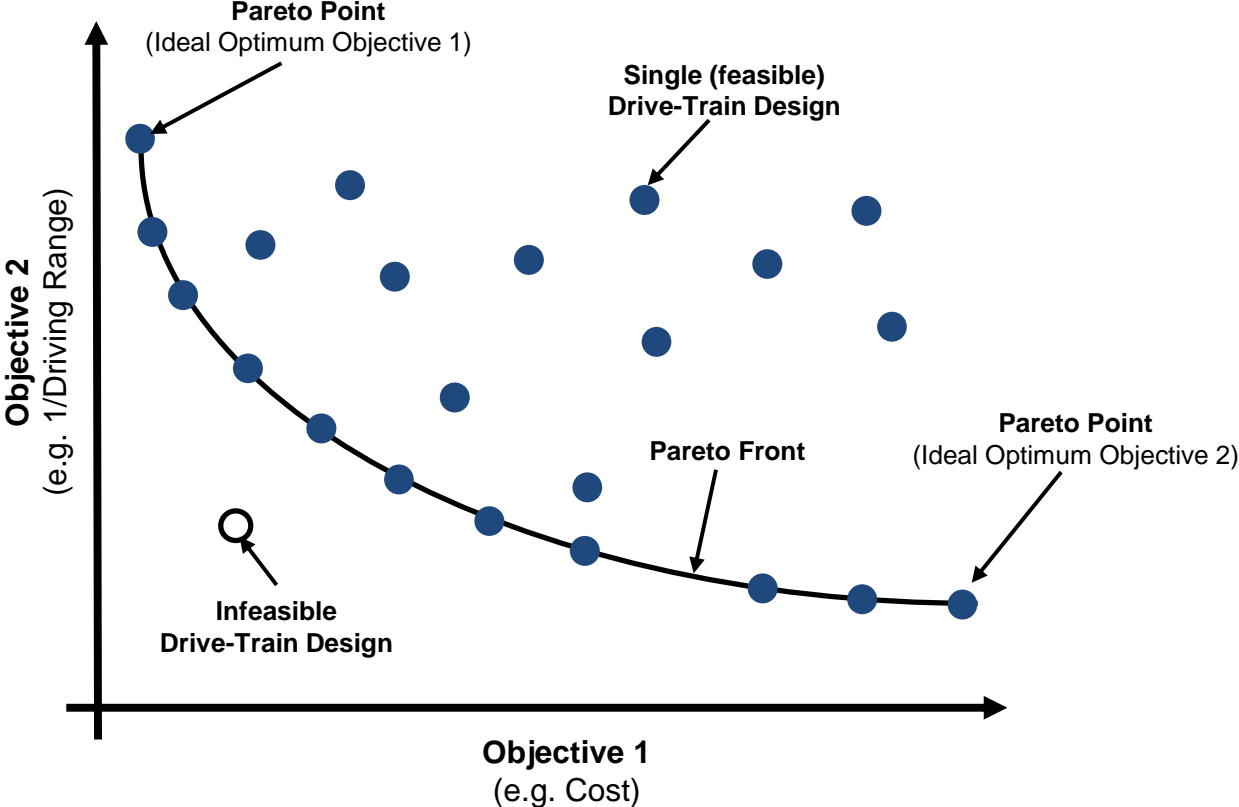
# Model Based Systems Engineering: Power of the Cluster Investigation Approach



# Model Based Systems Engineering: Power of the Cluster Investigation Approach



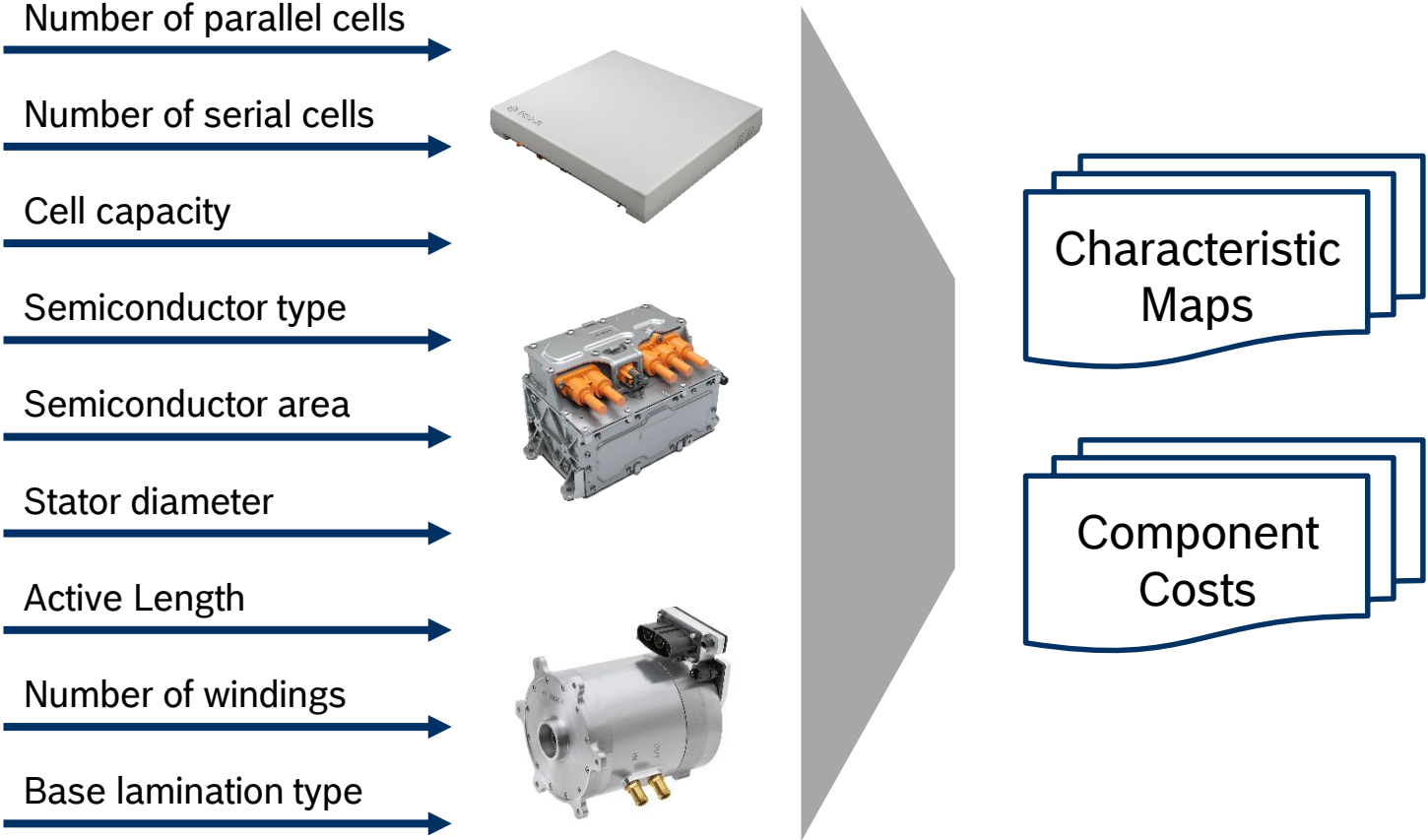
# Model Based Systems Engineering: Power of the Cluster Investigation Approach



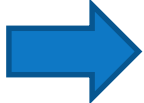
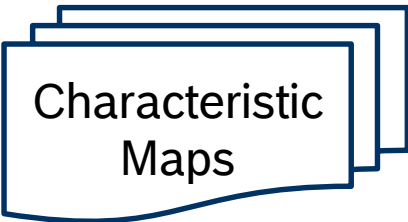


# Model Based Systems Engineering: Power of the Cluster

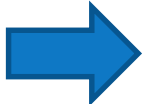
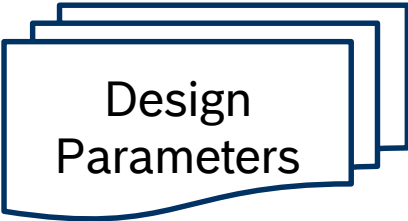
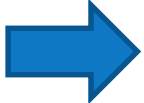
## Scalable Pre-Calculation for All Electric Drive Components



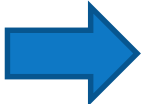
# Model Based Systems Engineering: Power of the Cluster Solution Using GT-SUITE - External Parameterization



EMA\_1\_DATA.txt



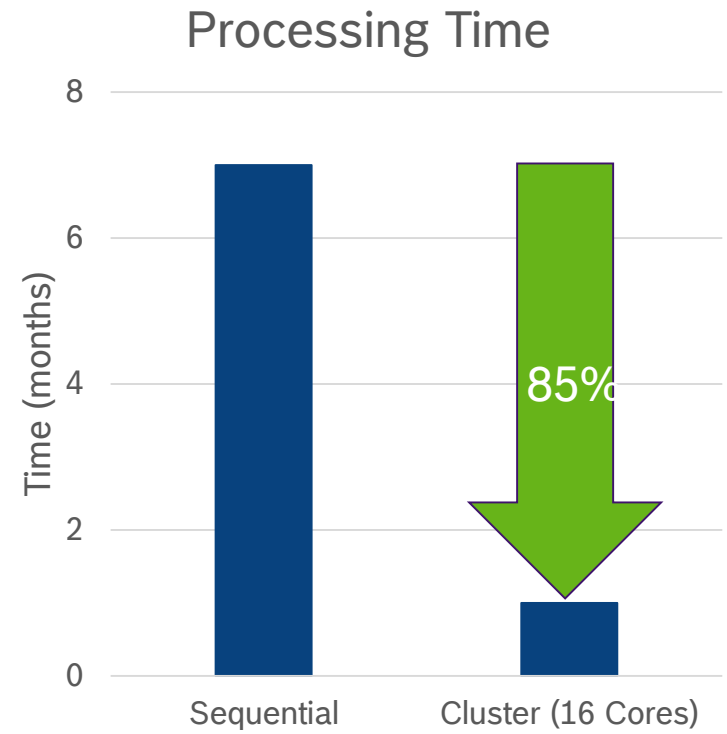
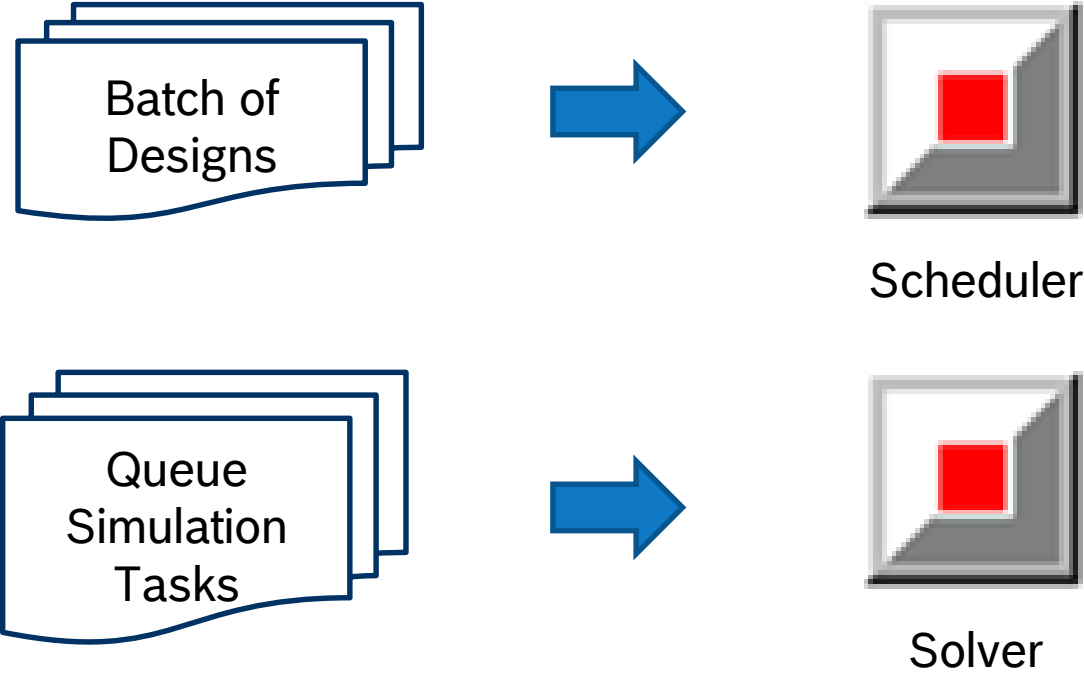
vehicle\_param\_file.txt



**Automated** handling of all component and vehicle parameters

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## Solution Using GT-SUITE - Parallelization



Optimized parallel processing enables short processing time

# Model Based Systems Engineering: Power of the Cluster

## Conclusions

- ▶ **Extensive evaluation** of solution space
- ▶ **Innovative** approach
- ▶ **Shorter time** to design decision
- ▶ **Knowledge** gained can be applied to future investigations



# Model Based Systems Engineering: Power of the Cluster

## Your Personal Points of Contact

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