

CETOL 60 **TM**

2011 U2U CONFERENCE

TEXAS MOTOR SPEEDWAY, OCT 25-26

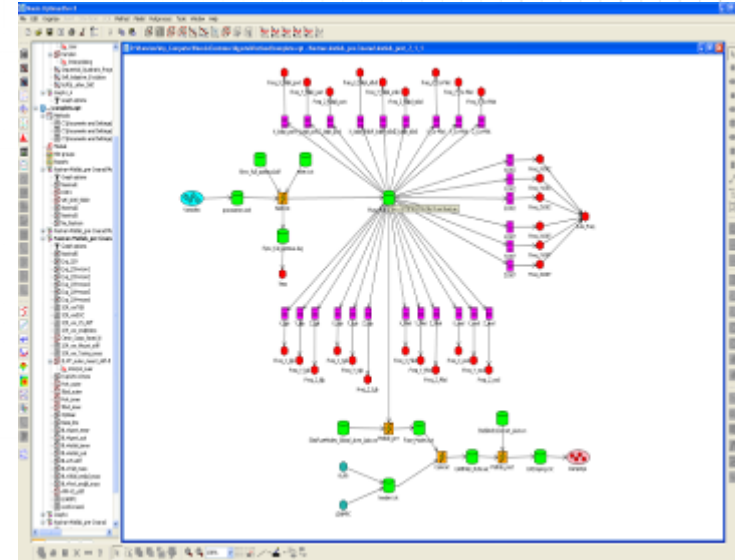
Process Integration and Design Optimization with Optimus

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Noesis Solutions Optimus, "Design-Right-First-Time" performance simulation

CETOL6™

- **Design Optimization**
Continuous drive to stronger, lighter, better-performing products. More control over variability, uncertainty and risks.
- **Automate execution of multidisciplinary simulation process**
Replace error prone trial & error exploration.
Better utilization of available corporate resources.
- **A single workflow to capture multidisciplinary simulation process**
Integrate heterogeneous CAE simulations from any engineering disciplines.



Power Plant



Consumer Electronics



Medical Equipment



White Goods

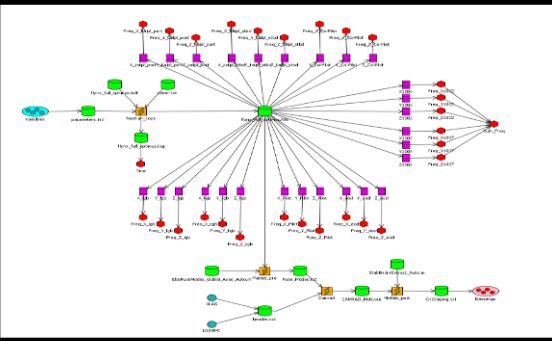


Machinery and Manufacturing



Energy Production

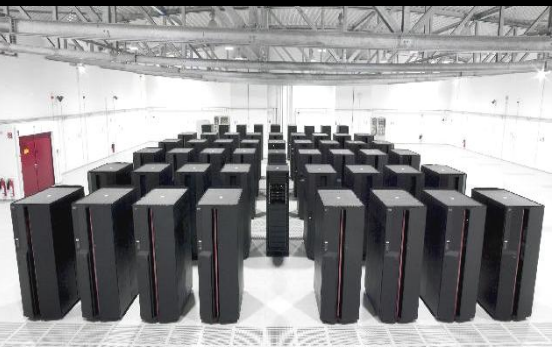
Simulation Workflow



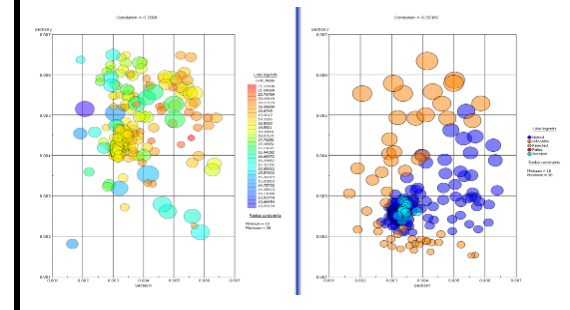
Optimization / RBDO



Process Execution

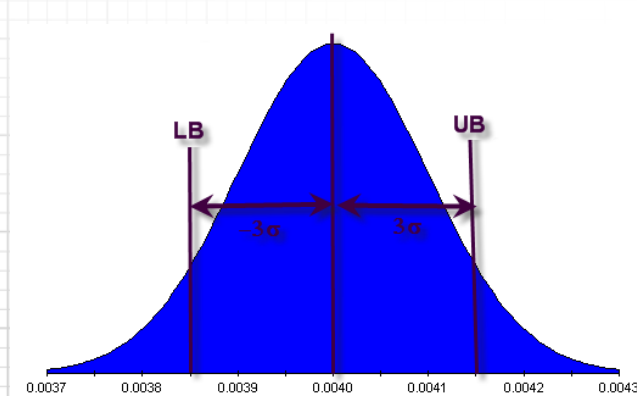


Post-Processing

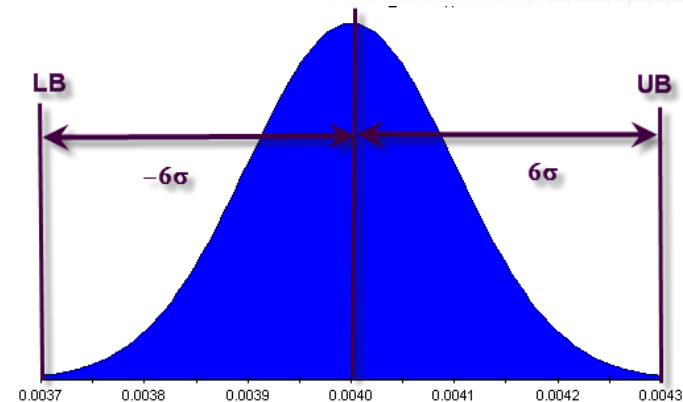


Six Sigma: What is Sigma? What is Sigma Level?

- Sigma (σ) is a standard measure of a products performance
- Sigma level is a measure of a products quality



A 3 σ design
Sigma level = 3



A 6 σ design
Sigma level = 6

- 6 σ performance means that (almost) ALL manufactured products lay within the product specifications

- Sigma Level can be translated in failures per million products
- Six Sigma is not ONLY twice as good as 3 Sigma - it is 20.000 times better!

Nbr. of Sigma	Percent Variation	Defects Per Mil
1	68.26	317,400
2	95.46	45,400
3	99.73	2,700
4	99.9937	63
5	99.999943	0.57
6	99.9999998	0.002

Six Sigma Examples

- **Is 99% perfect?**

- 15 minutes per day without running water
- Two crash landings in O'Hare Airport (US)
- 20.000 letters in the post-office lost per hour
- 5.000 failed surgical operations per week
- No electricity for 7 hours per month
- Watch slow by 15 minutes per day

- **Examples of Industry Sigma Level (target?)**

- Tax Authority Help Line (USA) 2.2 σ
- Medical Prescriptions 2.9 σ
- Industry Average 3.0 σ
- Airport Baggage Handling 3.2 σ
- Best-in-class companies 5.7 σ
- Watch missing 2 seconds in 31 years 6.0 σ
- Probability for an Airplane Crash (historical) 6.2 σ

Reliability and Robustness

