



Ground breaking  
Simulation Solutions

*physics on screen*

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# Metadb as a high performance results container

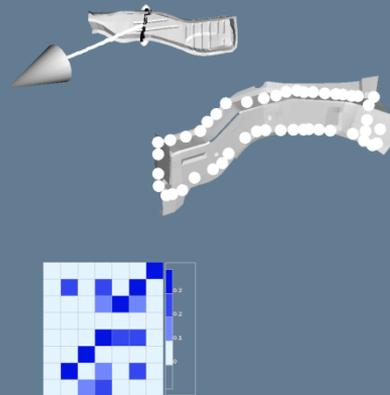
Dipl-Ing. Antonis Perifanis  
BETA CAE Systems SA

# Post-processor databases uses

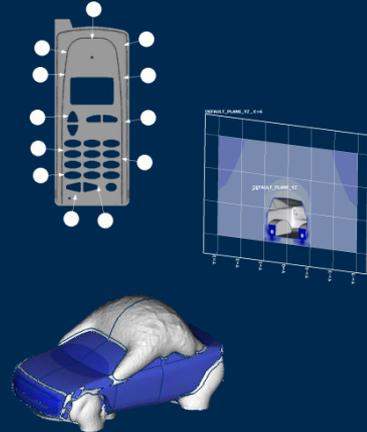
Save model /  
solver results



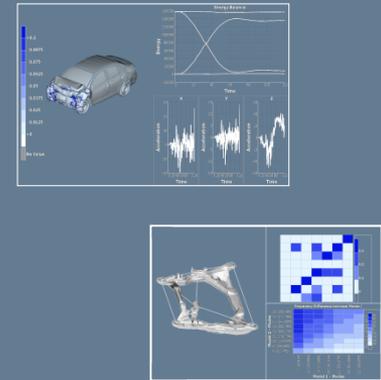
Save calculated  
results



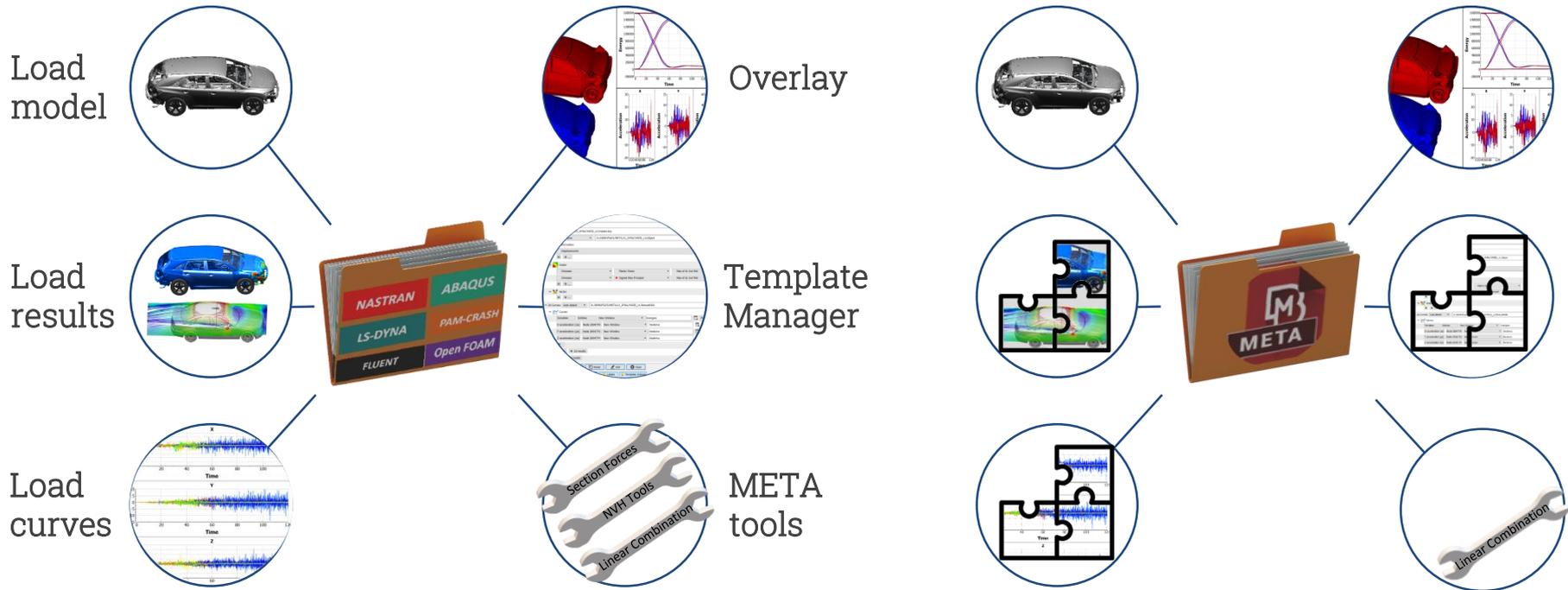
Save post-  
process entities



Organize results  
display



# Post-processor databases uses



**What if ...**

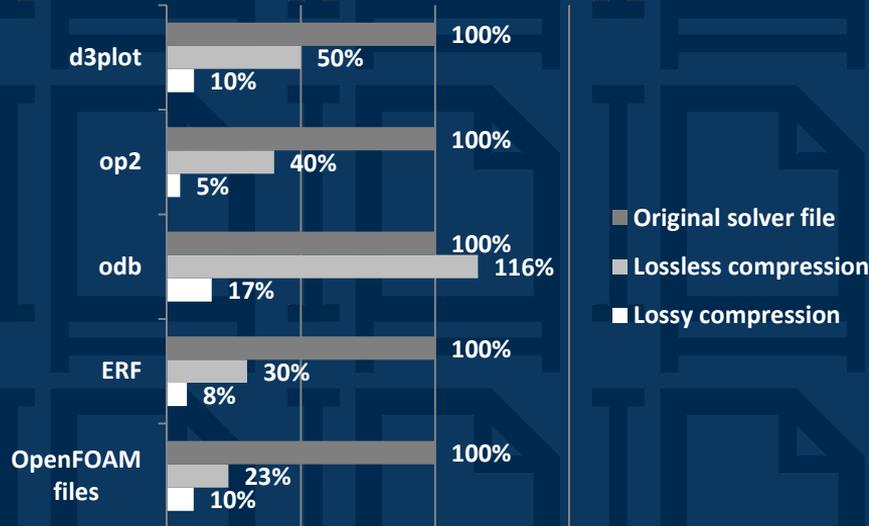
we could replace solver results databases with compressed metadbs?



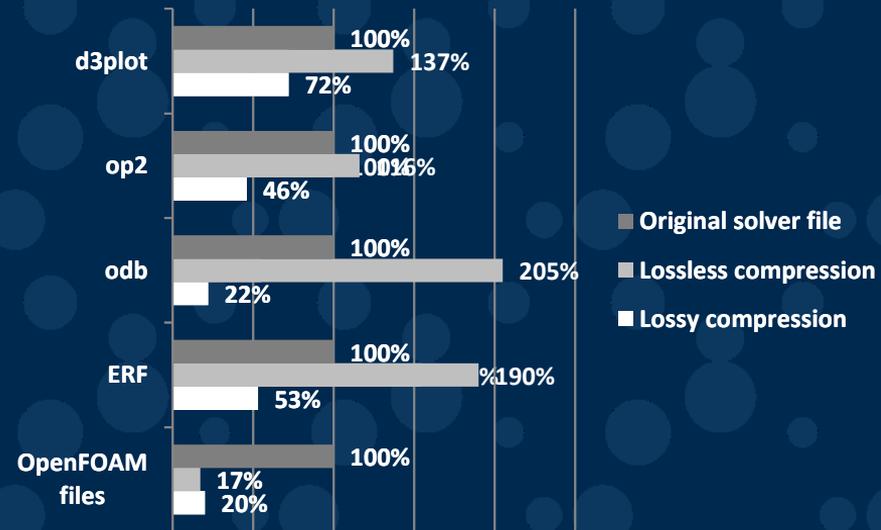
**Let's do a what if study ...**

# What if we could replace solver results databases with compressed metadbs?

## 90% reduced file size

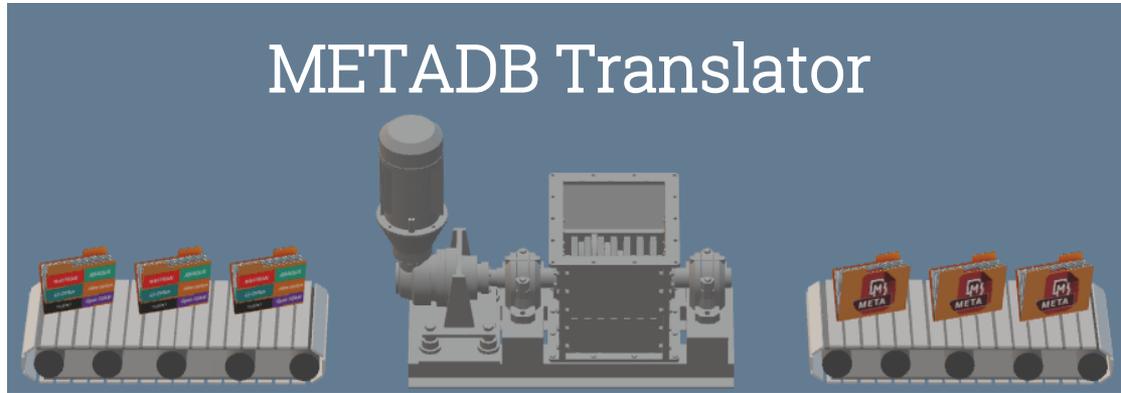


## 50% faster loading



v20.0.x

# What if we could replace solver results databases with compressed metadbs?



**In the package**



**Compression file**



**Batch**



**Keywords file**



**Auto identification  
of all solver results**

# What if we could replace solver results databases with compressed metadbs?

v18

Geometry Results Curves

Filename  
S:\software\_features\META/Compression/example.metadb

States Deformation Scalar Vector

a:0:BeamForces,AxialForce

Read Options

Nodes Elements Cut-Off Location

Nodal Calculation Average

Nodal Local System Local System Region Boundaries Ignore

Average Shell-Solid No

Default Label

a:0:BeamForces,AxialForce

+  Deformation +  Scalar +  Vector

- a:0:ElementForces,Moment-X
- a:0:ElementForces,Moment-XY
- a:0:ElementForces,Moment-Y
- a:0:ElementForces,Shear-X
- a:0:ElementForces,Shear-Y
- a:0:PartData,HourglassEnergy
- a:0:PartData,InternalEnergy
- a:0:PartData,KineticEnergy
- a:0:PartData,Mass
- a:0:PartData,Velocity-X
- a:0:PartData,Velocity-Y
- a:0:PartData,Velocity-Z
- a:0:Stresses,Normal-X(GCS),Ip1
- a:0:Stresses,Normal-X(GCS),Ip2
- a:0:Stresses,Normal-X(GCS),Ip3
- a:0:Stresses,Normal-Y(GCS),Ip1
- a:0:Stresses,Normal-Y(GCS),Ip2
- a:0:Stresses,Normal-Y(GCS),Ip3
- a:0:Stresses,Normal-Z(GCS),Ip1

v20

Geometry Results Curves

Filename  
NS/software\_features\META/Compression/example.metadb

States Deformation Scalar Vector

a:0:MetaResult::Stresses(GCS)

\* Von Mises

Max of In Out Mid

Read Options

Nodes Elements Cut-Off Location

Nodal Calculation Average Averaging Order Compute,Average

Nodal Local System Local System Region Boundaries Ignore

Average Shell-Solid Nodes

Default Label

etaResult::Stresses(GCS),Von Mises,Max of In Out Mid

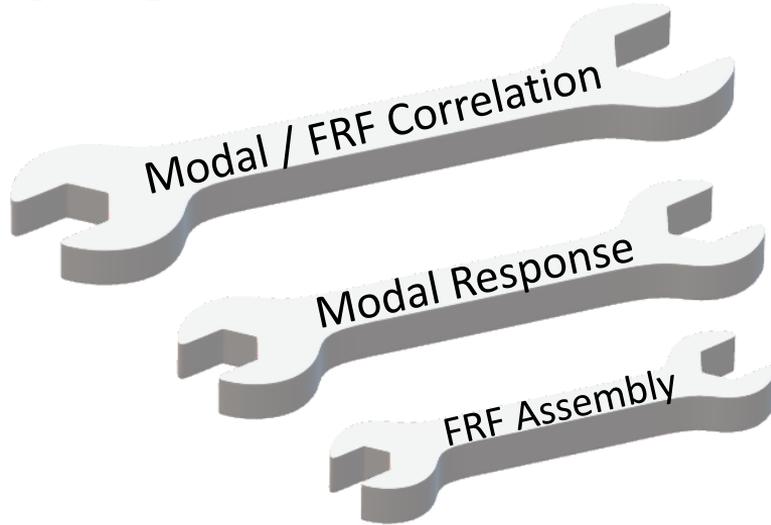
+  Deformation +  Scalar +  Vector  Read

- a:0:MetaResult::BeamForces
- a:0:MetaResult::ElementForces
- a:0:MetaResult::PartData
- a:0:MetaResult::Stresses(GCS)
- a:0:MetaResult::StressesMinusInitial(GCS)
- a:0:Accelerations
- a:0:Displacements
- a:0:Velocities
- \* Von Mises
- \* Tresca
- \* Mean Pressure
- \* Third Invariant
- Plastic Strain
- \* Major Principal
- \* Minor Principal
- \* In-Plane Max Shear
- \* Shear Angle
- \* Max Shear
- Normal-X(GCS)
- Normal-Y(GCS)
- Normal-Z(GCS)
- Shear-XY(GCS)
- Shear-YZ(GCS)
- Shear-ZX(GCS)
- \* First Principal
- \* Second Principal
- \* Third Principal
- \* Total Principal

# What if we could replace solver results databases with compressed metadbs?



## NVH Tools



## What if ...

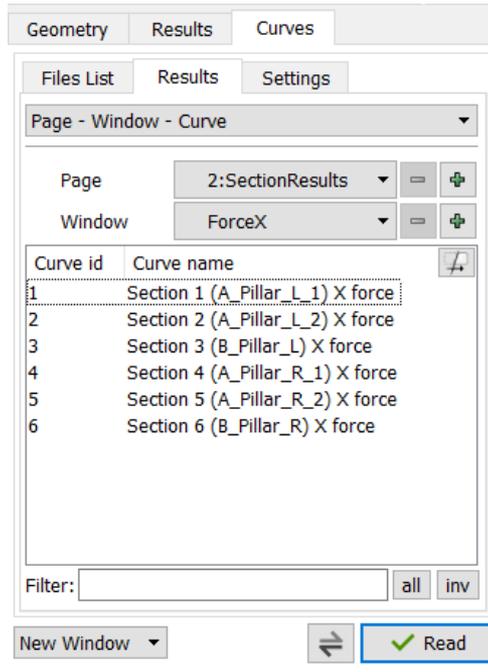
we could replace solver results databases with compressed metadbs?

we could replace history results databases with metadbs?



**Let's do a what if study ...**

# What if we could replace history results databases with metadbs?



**Load curves individually**



**Load according to attributes**



**Loadcase**



**Reference name + Response name**



**Page - window**



**Max > threshold**

## What if ...

we could replace solver results databases with compressed metadbs?

we could replace history results databases with metadbs?

we could use the metadb with our save post-process work as a compressed solver results database?



**Let's do a what if study ...**

# What if we could use the metadb with our save post-process work as a compressed solver results database?



Job submission



Load 3d results  
individually



Load curves  
individually

## What if ...

we could replace solver results databases with compressed metadbs?

we could replace history results databases with metadbs?

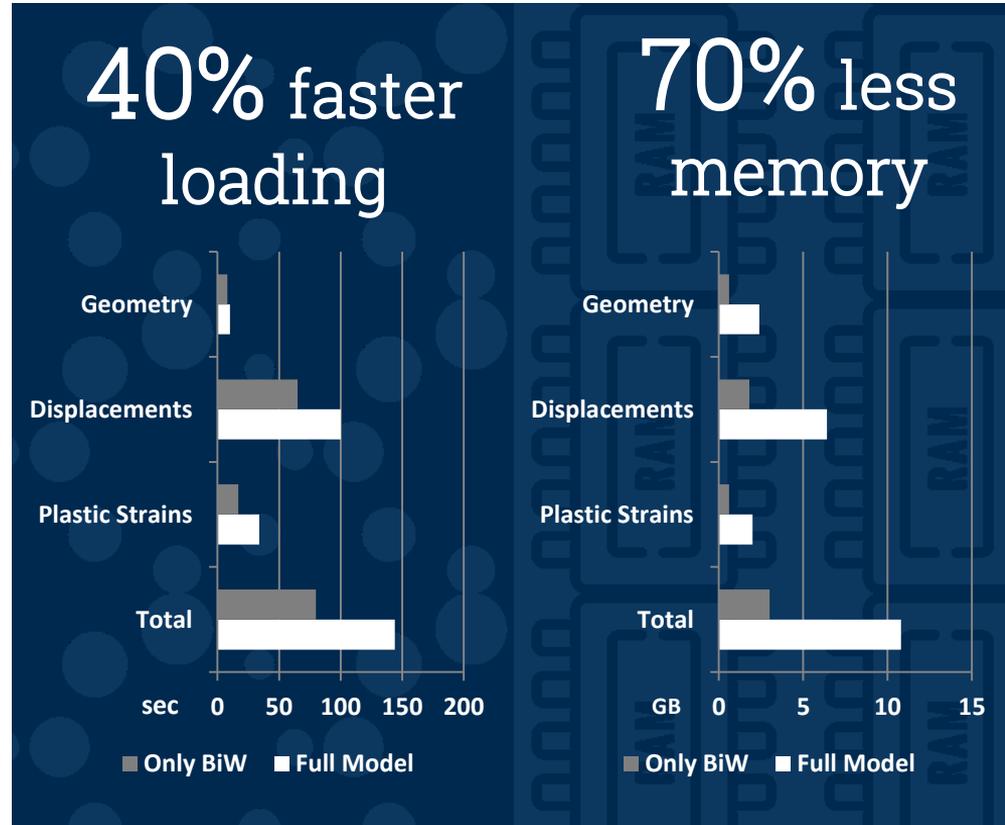
we could use the metadb with our save post-process work as a compressed solver results database?

we could load partial info from metadb?

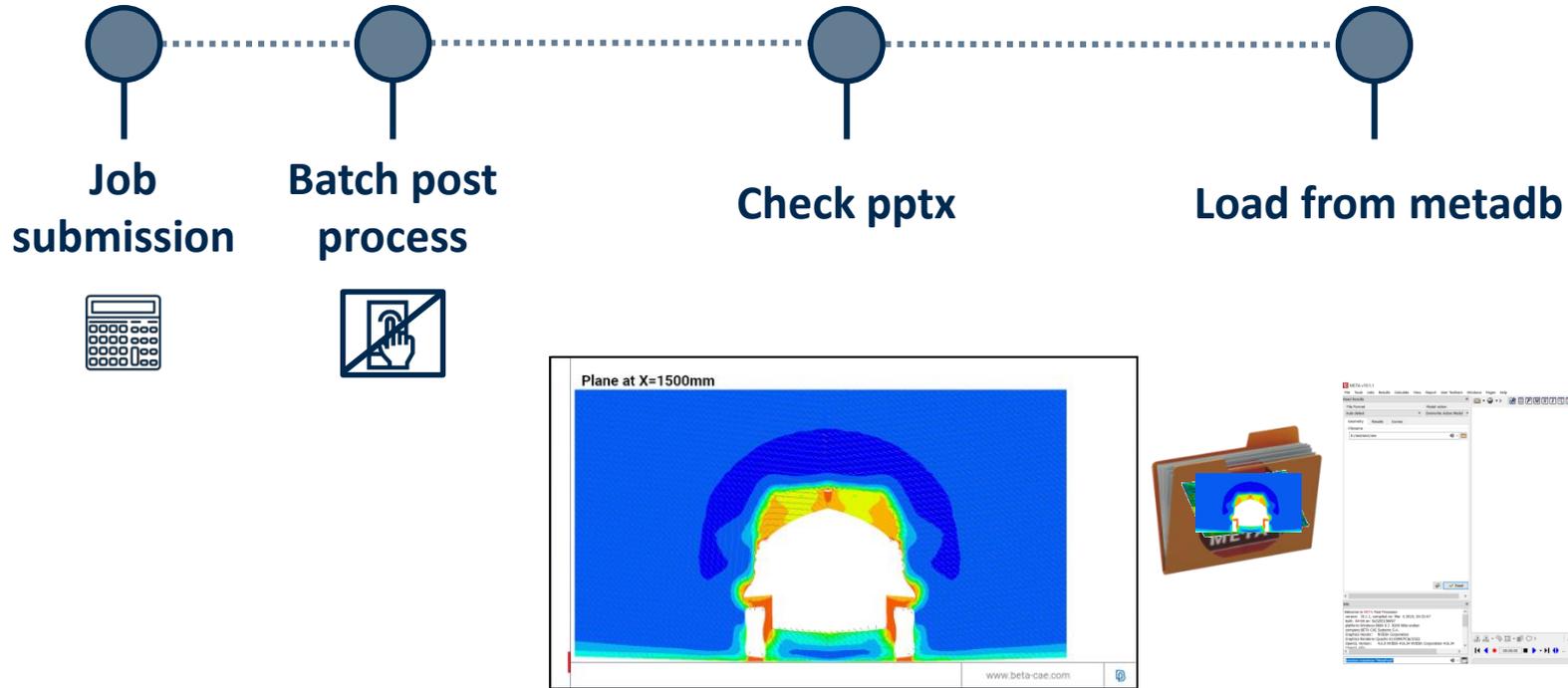


**Let's do a what if study ...**

# What if we could load partial info from metadb?



# What if we could load partial info from metadb?



## What if ...

we could replace solver results databases with compressed metadbs?

we could replace history results databases with metadbs?

we could use the metadb with our save post-process work as a compressed solver results database?

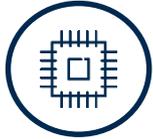
we could load partial info from metadb?

we could get a simplified model in metadb?



**Let's do a what if study ...**

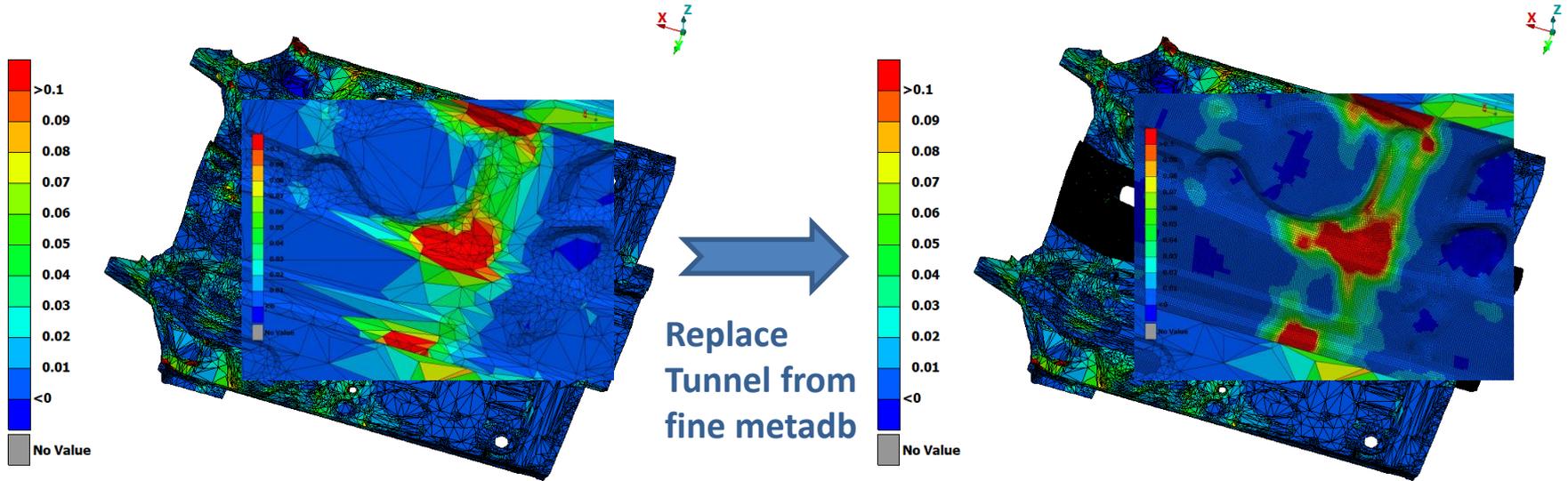
# What if we could get a simplified model in metadb?



Fewer hardware requirements



Replace on PID level while post-processing



# What if we could get a simplified model in metadb?



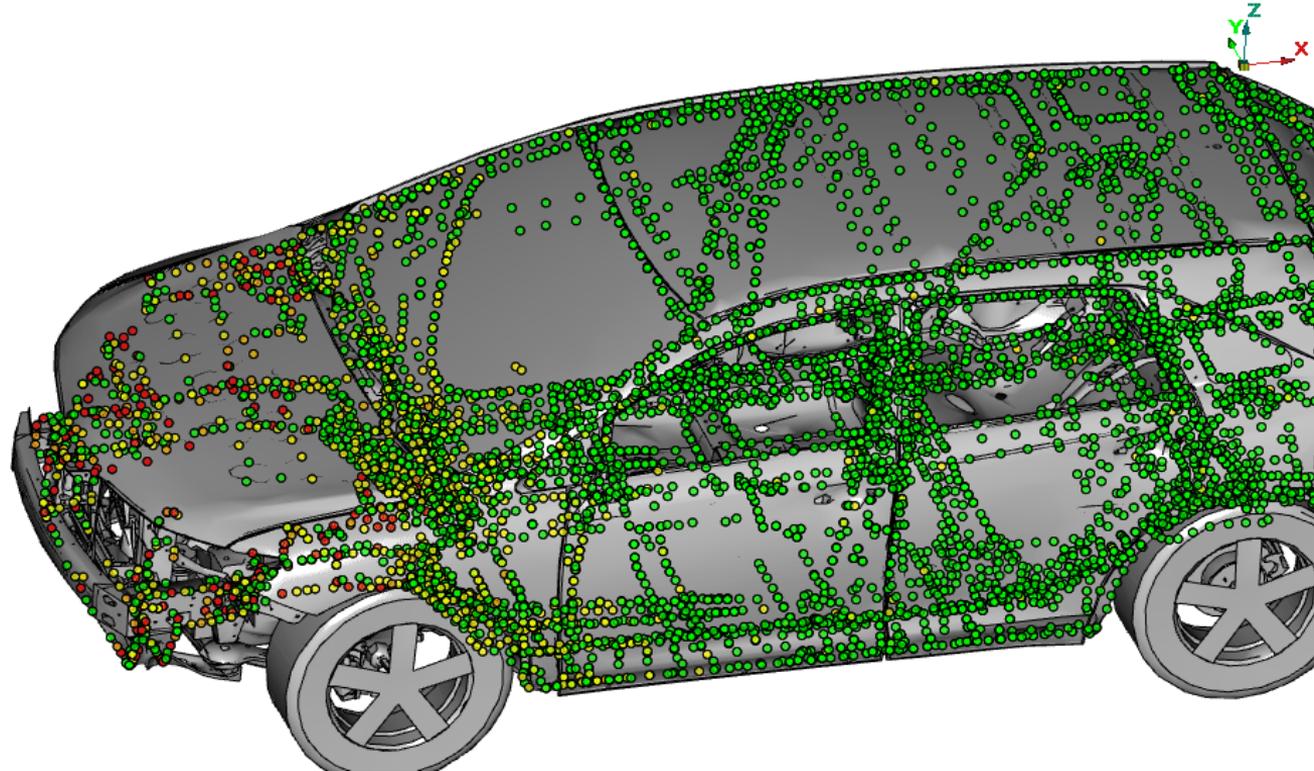
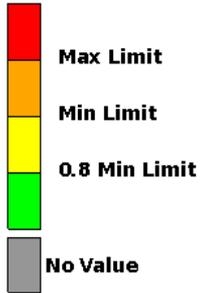
Depict 3d position of entities better

# What if we could get a simplified model in metadb?



Depict 3d position of entities better

## Spotwelds failure



## What if ...

we could replace solver results databases with compressed metadbs?

we could replace history results databases with metadbs?

we could use the metadb with our save post-process work as a compressed solver results database?

we could load partial info from metadb?

we could get a simplified model in metadb?

we could replace reports through metadbs?



**Let's do a what if study ...**

# What if we could replace reports through metadbs?

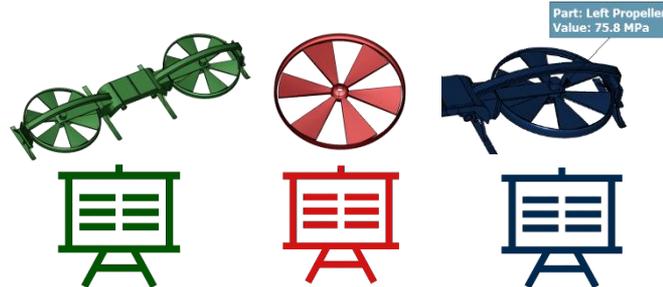
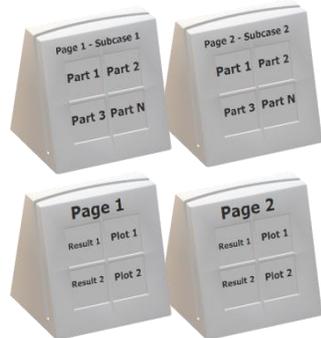


**Display and  
store results**

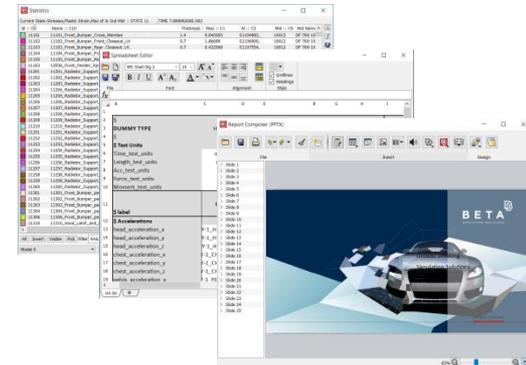
**Present  
information**

Extra information on models,  
parts, annotations, etc

Pages/windows



Report Composer,  
Spreadsheet, Statistics



# What if we could replace reports through metadbs?



Display and store results

Present information

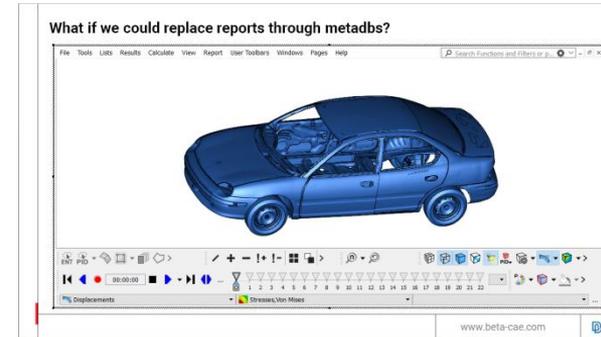
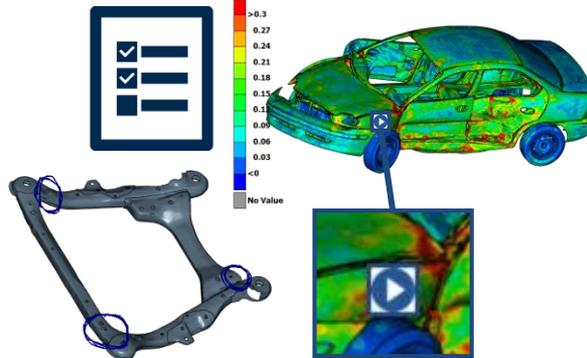
Report slide show, Overlay in Spreadsheet

To-Dos list, Sketch tool  
Trigger actions

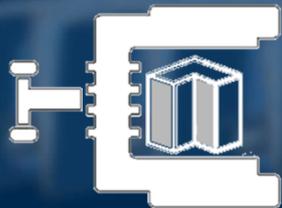
OLE object



Model A	Model B	Model C	Model D



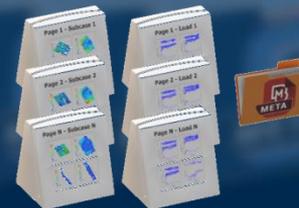
# Summary



**Compressed results  
database**



**History results database**



**Post-processing & results  
storage**



**Partial  
loading**



**Draft  
representation**



**Metadbs as  
reports**



and you'll never post alone

Any questions ?





Stay connected

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