PSA PEUGEOT CITROËN

Simulation-Based CGI for Automotive Applications

March 17, 2015 | San Jose

Benoît Deschamps

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Agenda

1. **CGI for automotive**
2. Challenging the physical mockup
3. Simulation based on CGI
4. Future of CGI
5. Conclusion

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1

PSA Peugeot Citroën Group

2014

- **$62 Billions** in revenue
- **2,94 Millions** Cars produced
- **2nd Largest** car manufacturer in **Europe**
- **194 682 Employees** in **160** countries

- **Three brands** with strong identities and differentiated

PEUGEOT

CITROËN

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PSA Peugeot Citroën IT Department

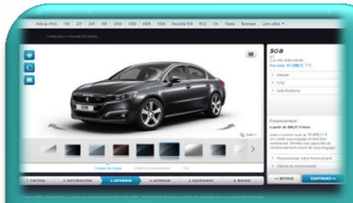
In charge of CGI solutions and VR solutions for all departments

1

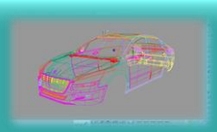
Explore System | Design System | Define Architecture & Solutions | Design product & process | Verify, validate, adjust product & process | Pilot serial life

Styling

Perceived quality



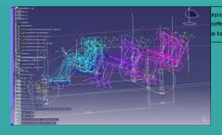
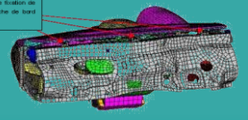
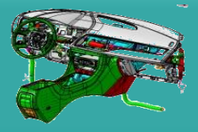
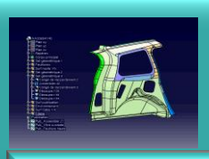
Marketing Images



Class A Modeling

After Sales

Digital Factory

Computing Design

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Virtual Reality and driving simulation

1

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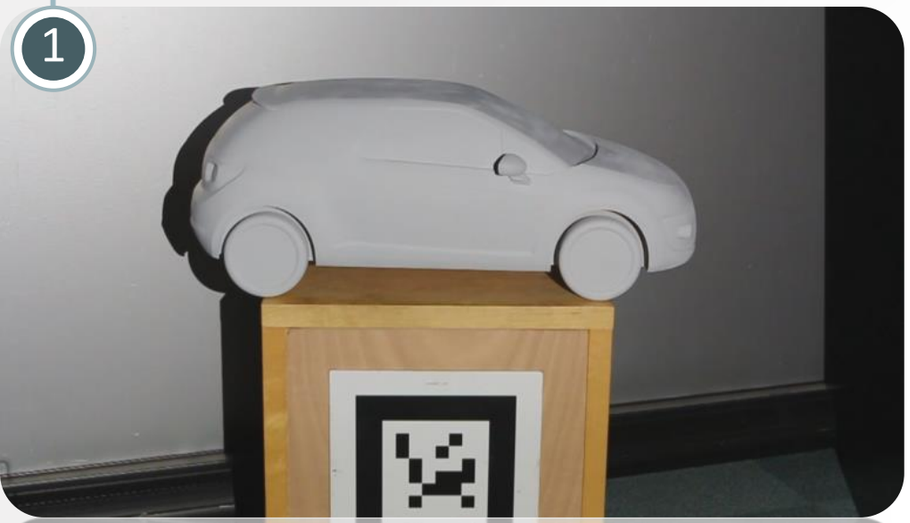
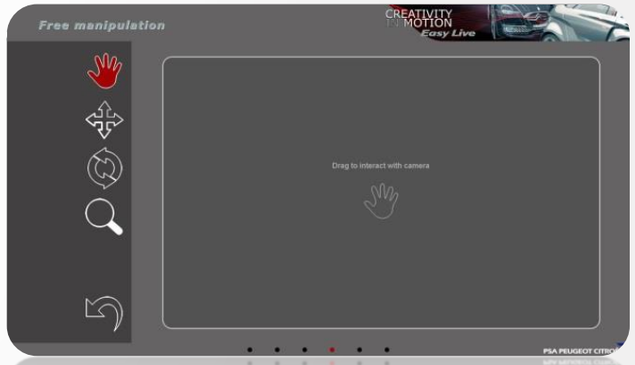
Augmented Reality, Projection Mapping, New Interface

1





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Automatic CGI production

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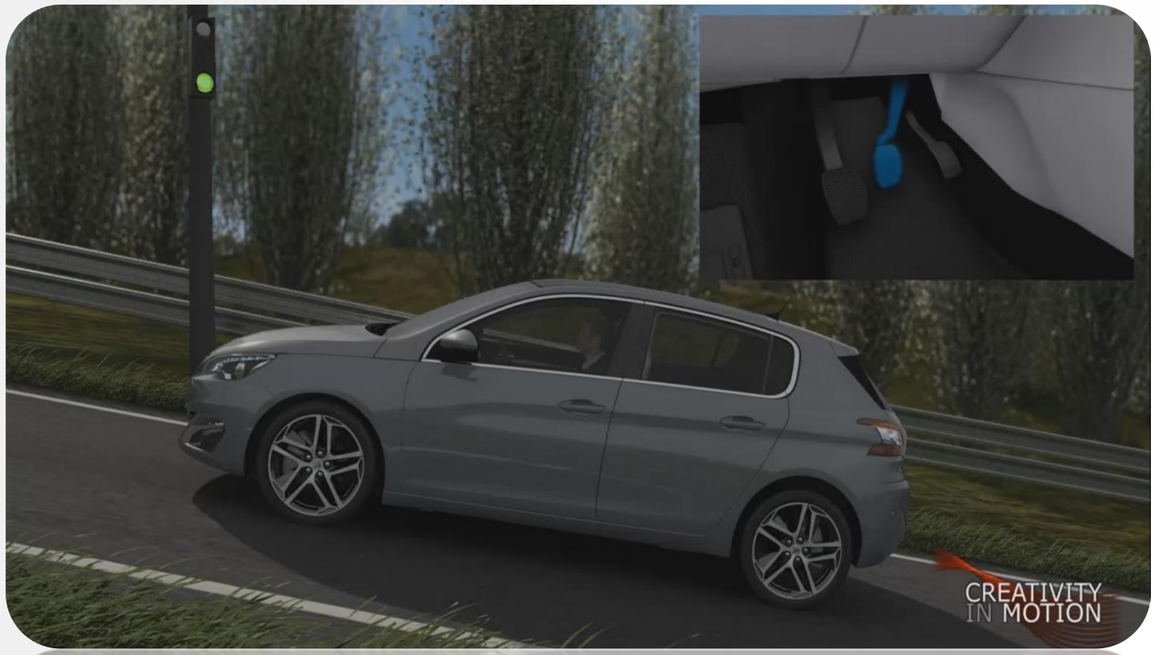

CREATIVITY IN MOTION

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Challenging the physical mockup

Design quickly, Good design …. And cost reduction…

- The physical mockup is necessary but
  - It is difficult to update the mockup with the CAO production
  - Color and Trim are limited

- The cost is important if we need to illustrate all possibilities
  - Variant
  - Interior / exterior

- Driving on the road is limited…

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Challenging the physical mockup

Design quickly, Good design …. And cost reduction…

- Virtual mockup and CGI can help us :
  - If we add tools to understand what we see and evaluate properly the default.
  - If we can automatically provide solution from a numerical simulation.
  - If we provide solution to evaluate the virtual mockup with the same simplicity and quality than the physical mockup.

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Simulation based on CGI

How to analyse that we see on CGI…

DeltaGen 12.1.1

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Simulation based on CGI

3

The solution: Combine physical based rendering and false color analysis

DeltaGen 12.1.1

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Simulation based on CGI

The solution: Combine physical based rendering and false color analysis

DeltaGen 12.1.1

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Simulation based on CGI

Simulate with a virtual mockup a problem, it's a best practice…

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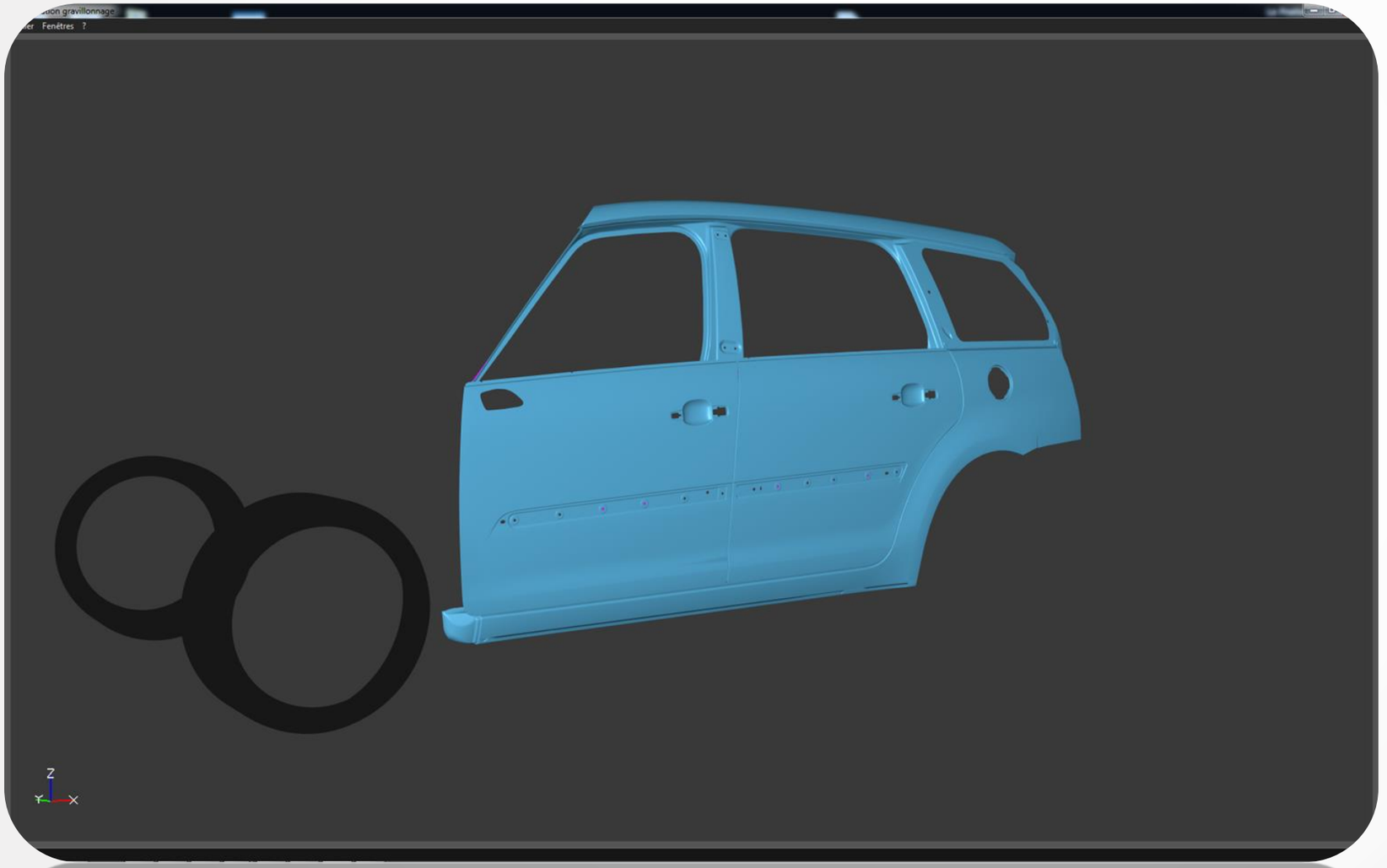

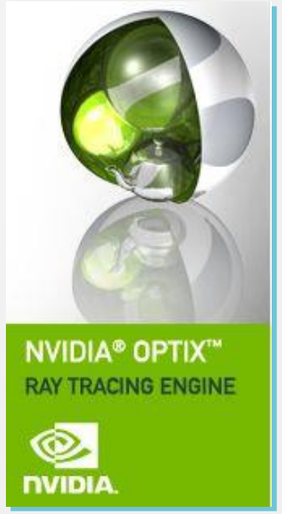

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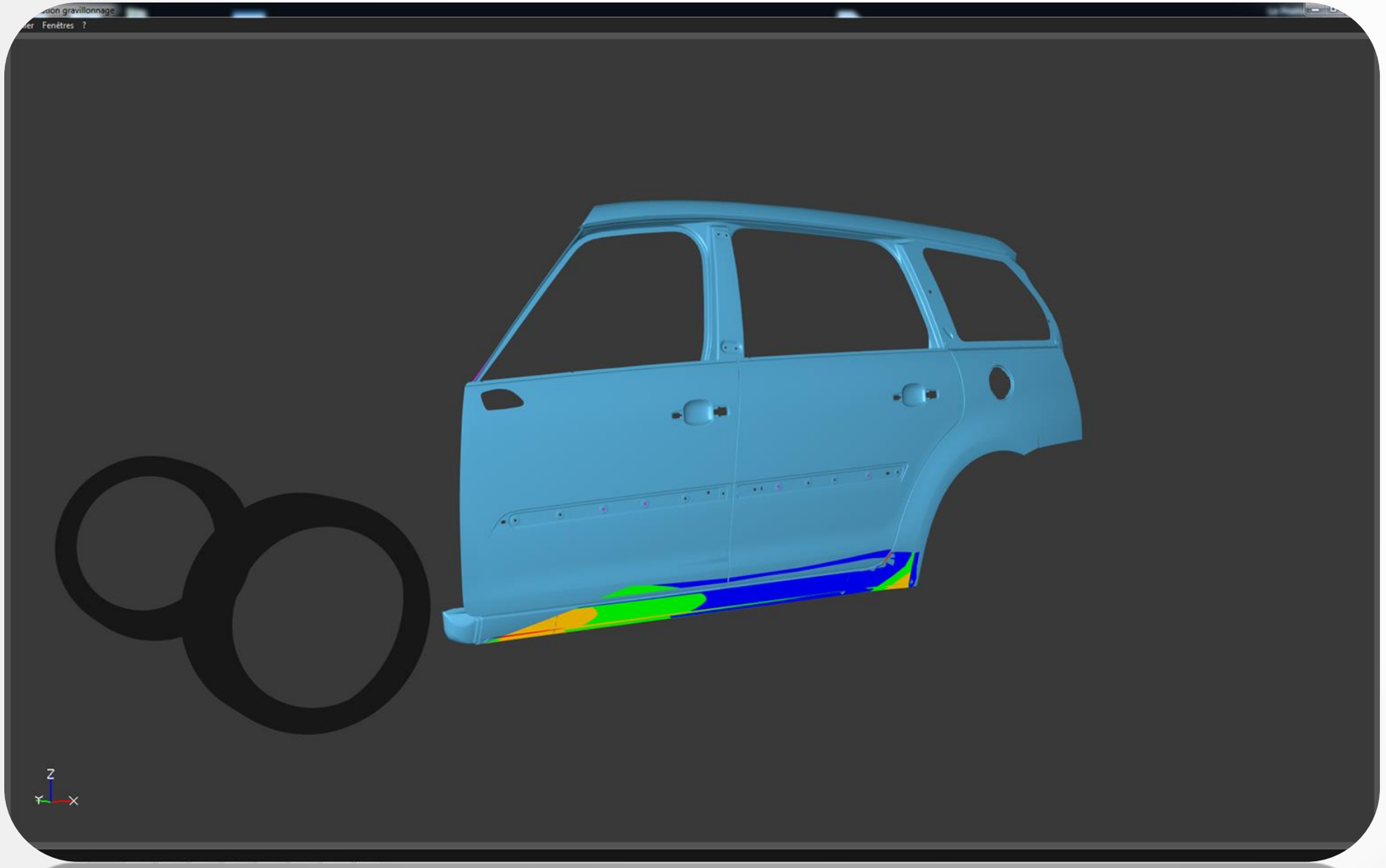

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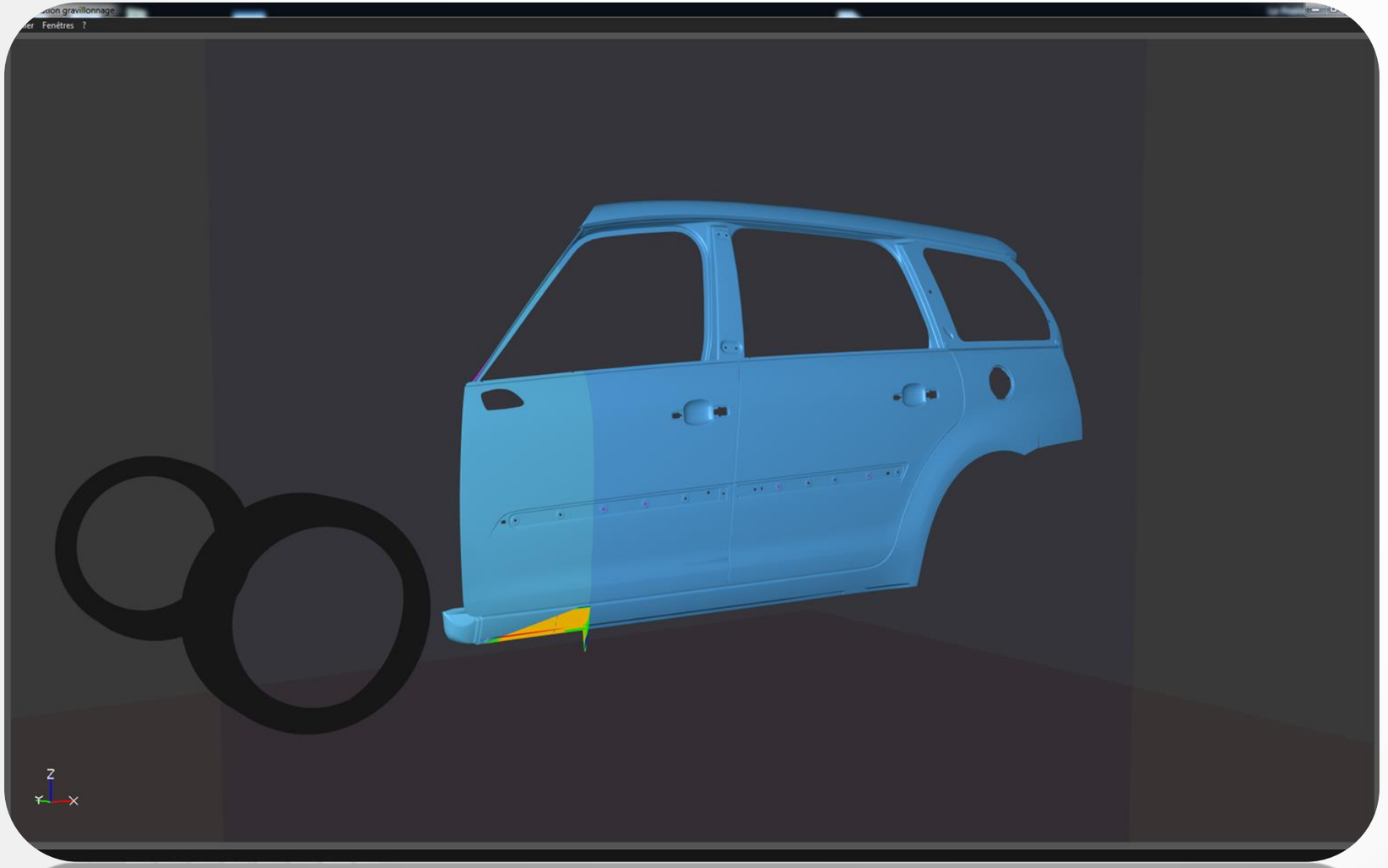
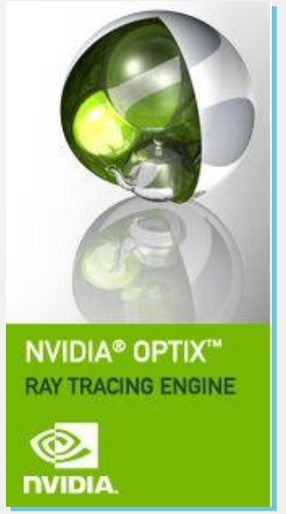
Simulation based on CGI

But help the designer to find the best solution to solve this problem, it is better





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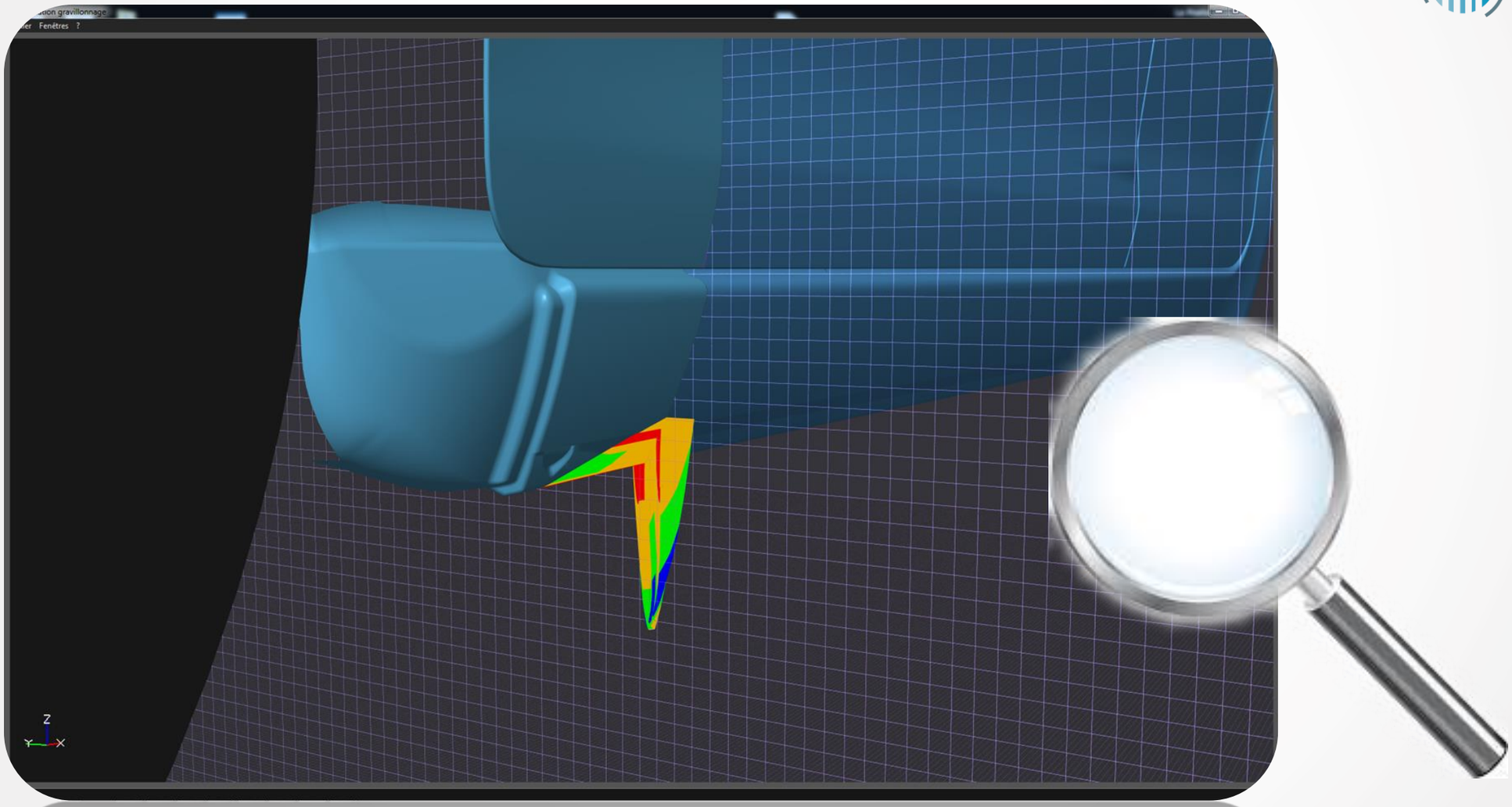

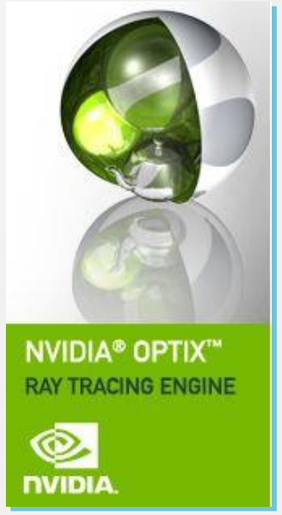

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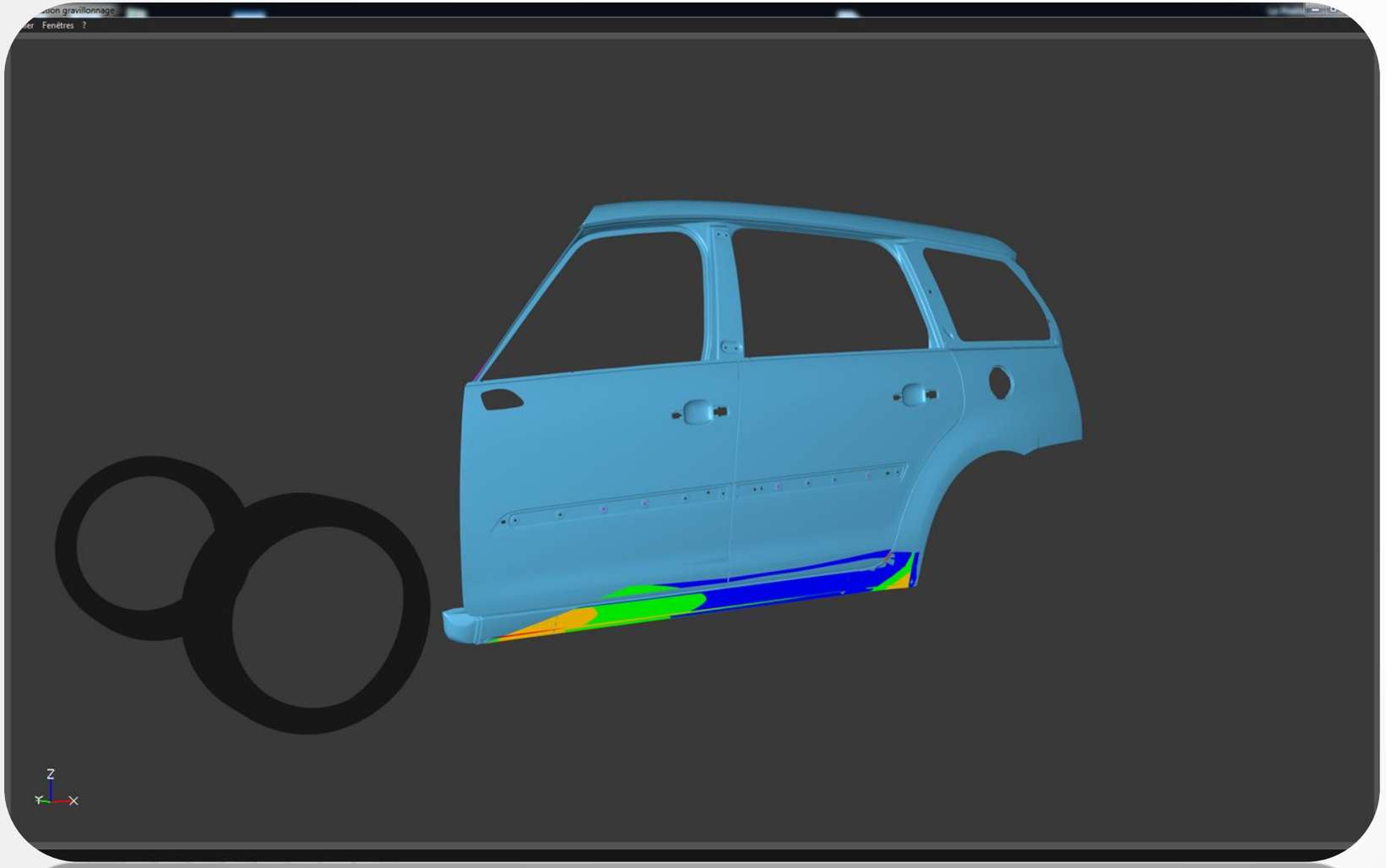

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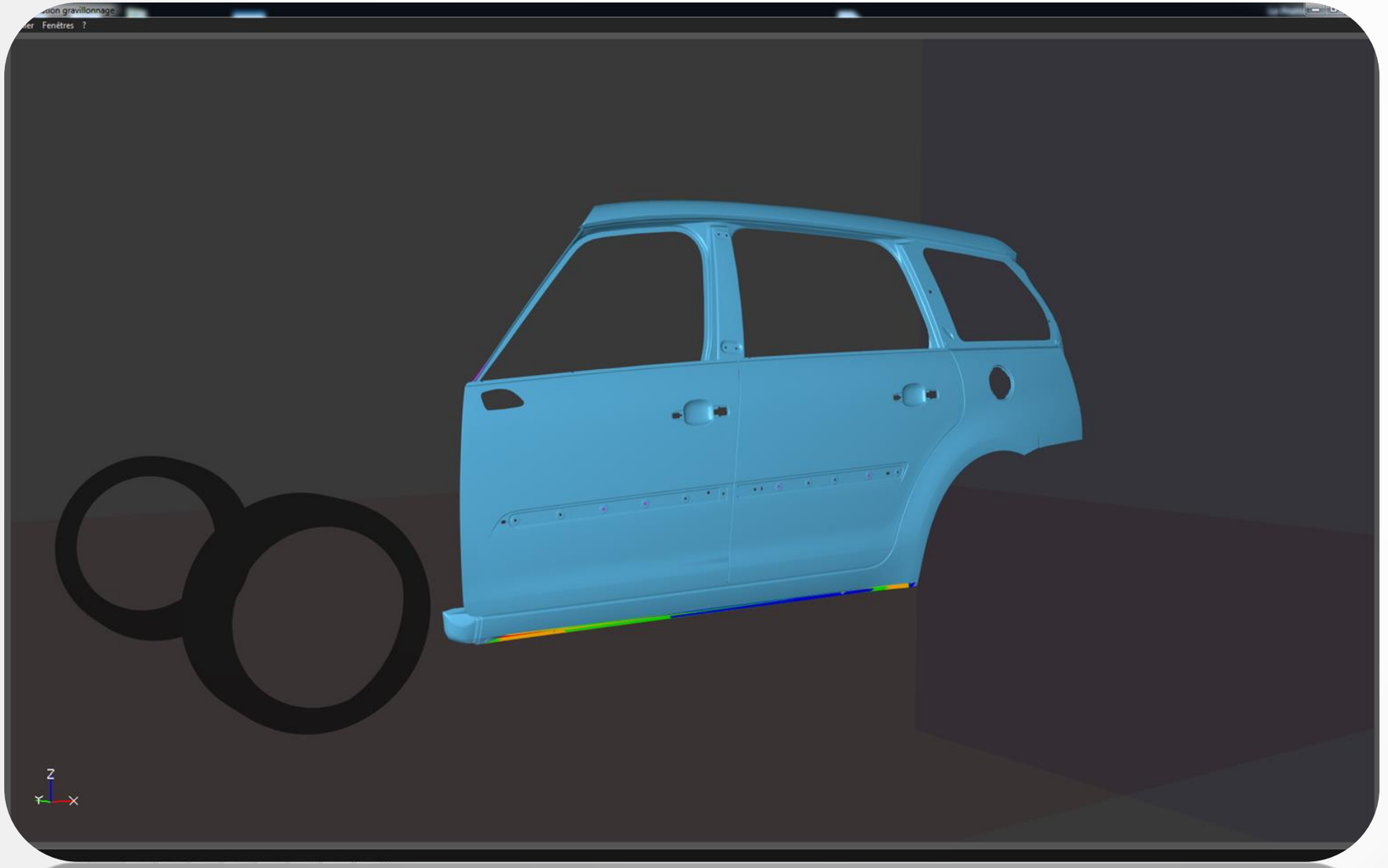

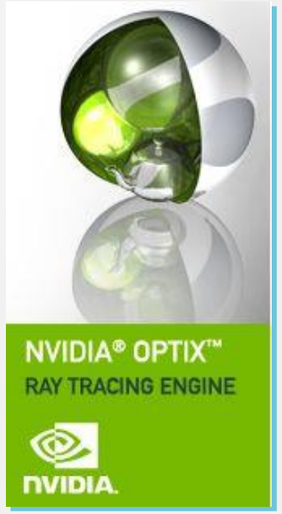

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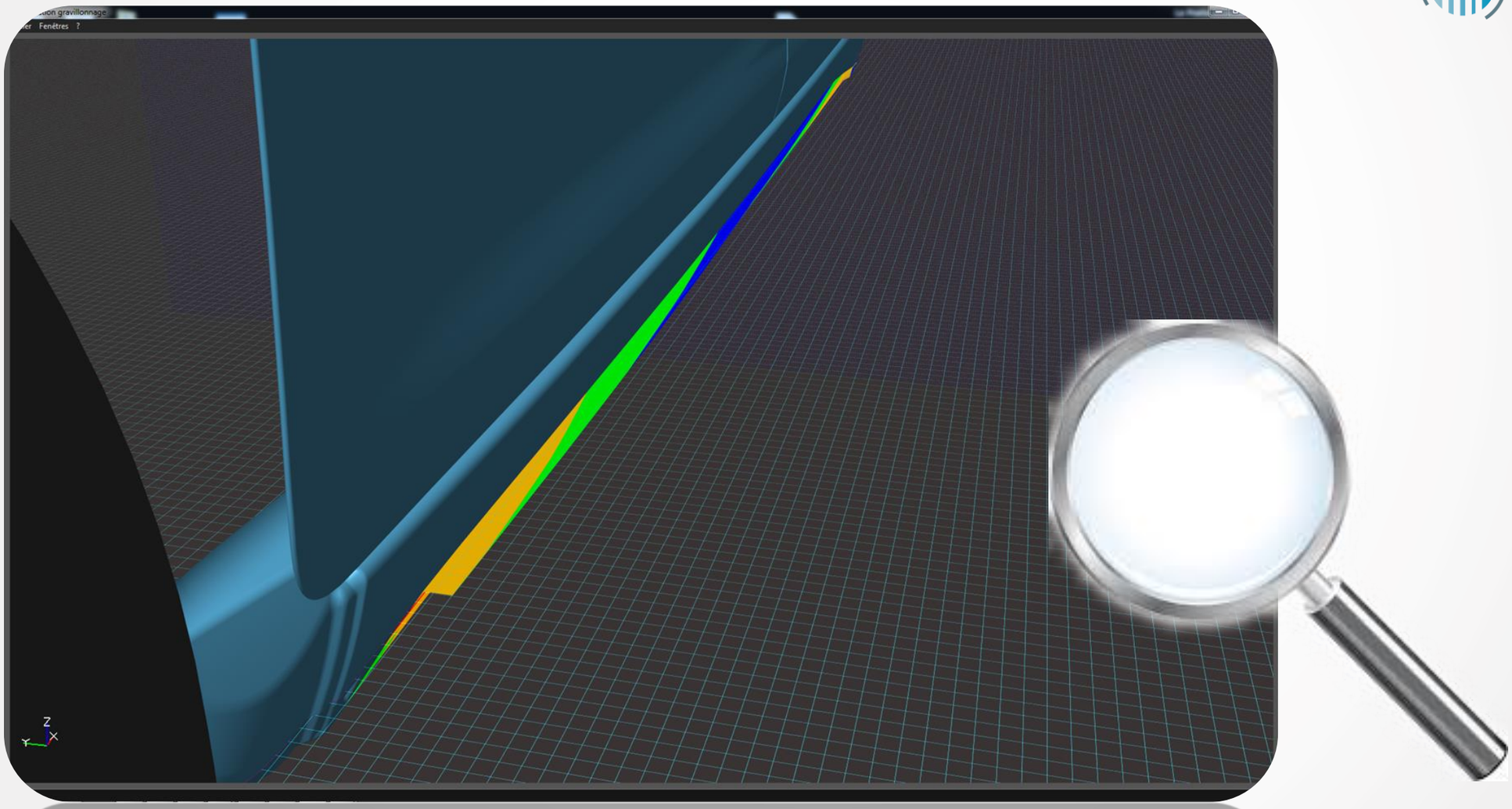

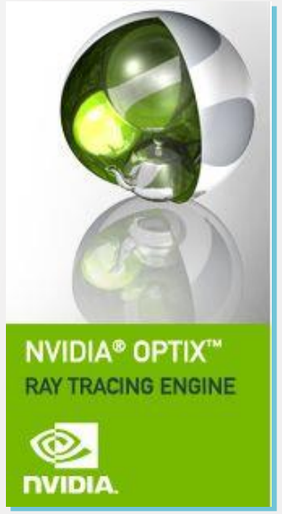

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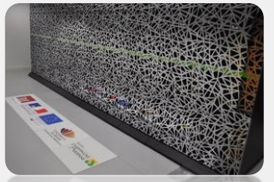
Simulation based on CGI

Full Quality In realtime : 4K resolution, Global Illumination, …



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Future of CGI

I had a dream … and the dream becomes reality

- Realtime rendering for all people
  - User friendly interface.
  - Available for all platforms : computer, tablet, smartphone, …
- Realistic rendering
  - Based on material and light measurement.
  - Global Illumination.
- Power on Demand:
  - CPU, GPU, MultiGPU, HPC, Grid computing, …

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Conclusion

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We don’t work alone …

- Thanks to
  - Nvidia Team.
  - GTC Team.
  - 3DExcite R&D Team.
  - University of Reims URCA
  - Romeo Team
  - …
- Special thanks to
  - My team.
  - My end users.
  - Stéphane Wolf and Chen XU
  - …

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