

Modular Course C: DESIGN ENGINEERING

UNIT C1: Digital Design and Engineering Tools

LC1.4 - Best practices



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DISHOLEA | Improving the digital
skills of workforce in Shoe and
Leather goods Industry in Jordan and
Palestine | GA 101129194



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1. Connecting CAD-CAE-CAM-PLM Chain
2. Virtual Prototyping and Digital Testing
3. Realistic Material Modeling
4. Sustainable and Energy-Efficient Design
5. Personalization
6. Breeding with Data
7. Best practices



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Connecting CAD-CAE-CAM-PLM Chain

Purpose: To integrate design, analysis, manufacturing, and lifecycle.

- Example: ECCO and Adidas run their processes with Digital Twin-based PLM.



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Virtual Prototyping and Digital Testing

Purpose: To reduce the number of physical samples, to make environmental and fast verification.

PUMA reduced the number of samples with digital twin-based modeling.

3D shoe models are worn and tried on in AR/VR environments.

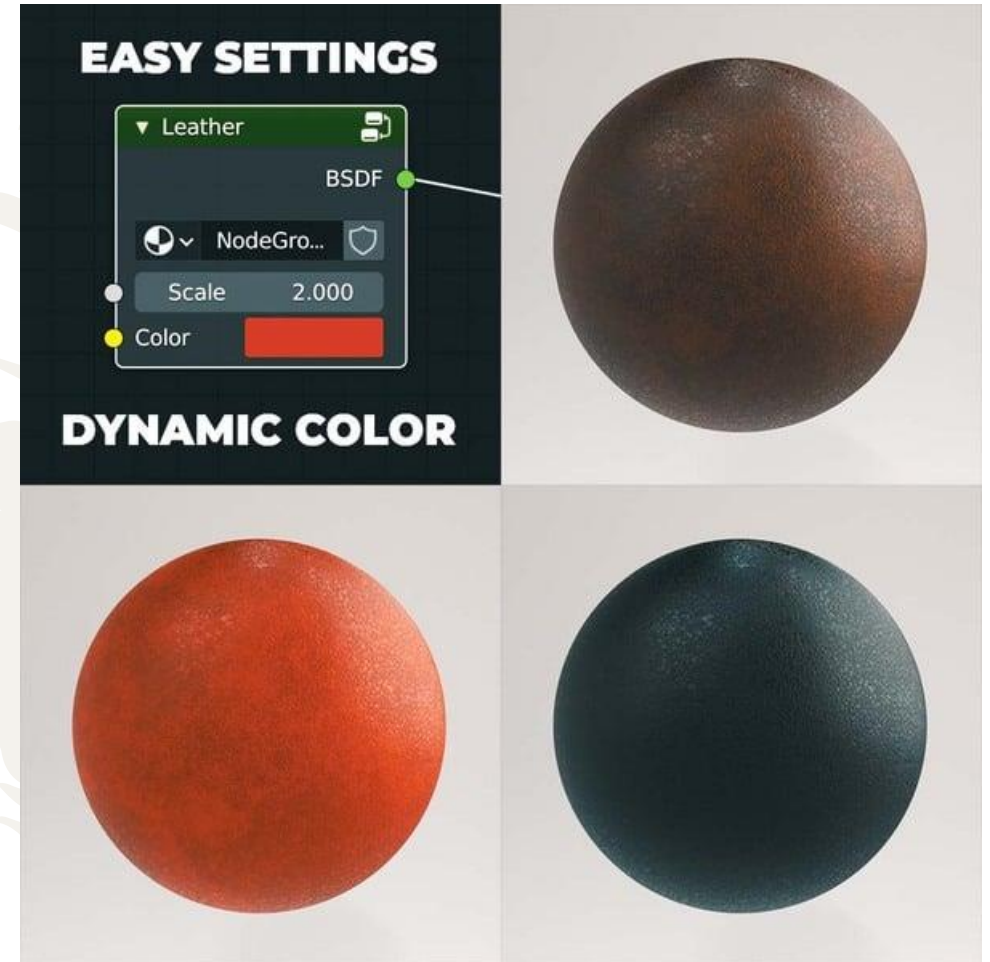


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Realistic Material Modeling

Objective: To bring material behavior closer to physical reality in the digital environment.

Example: PUMA and ECCO have created a database of digital materials.



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Sustainable and Energy-Efficient Design

Purpose: Reduce environmental impact through digital transformation.

Example: Example: On Running reduced prototype waste with 3D printing.



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Personalization

Purpose: To produce personalized soles.

Example: ECCO Quant-U
Personalized 3D Printed Base



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Breeding with Data

Objective: Algorithmic design
based on 17 years of runner
data

Example: Adidas Futurecraft
4D



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Breeding with Data

Purpose: Dynamic Motion
Optimization

Example: Adidas 4DFWD

The return of 3D printing to
engineering optimization"



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New Balance TripleCell
Platform

Collaboration with Formlabs;
a special resin, **Rebound
Resin**, was developed.

TripleCell sole components
have a lighter and spring-
like feel than traditional
EVA foam.

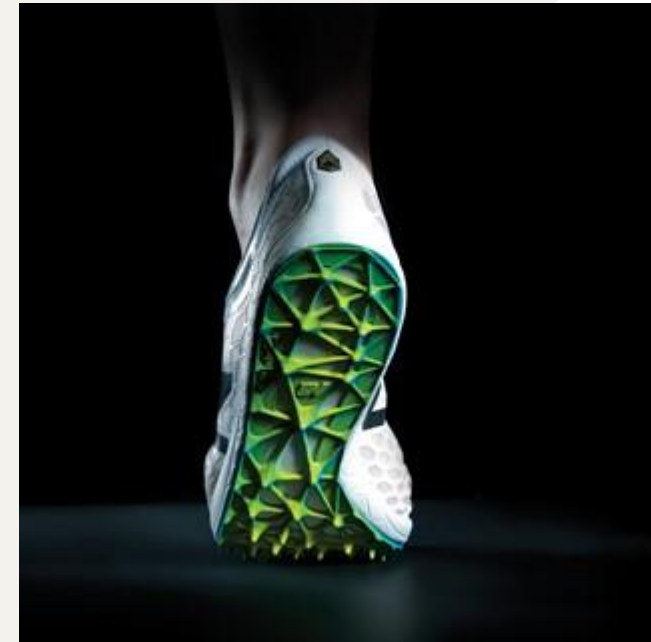


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New Balance Spike Plate

Production of 3D spike plate
by analyzing athletes' sprint
data.

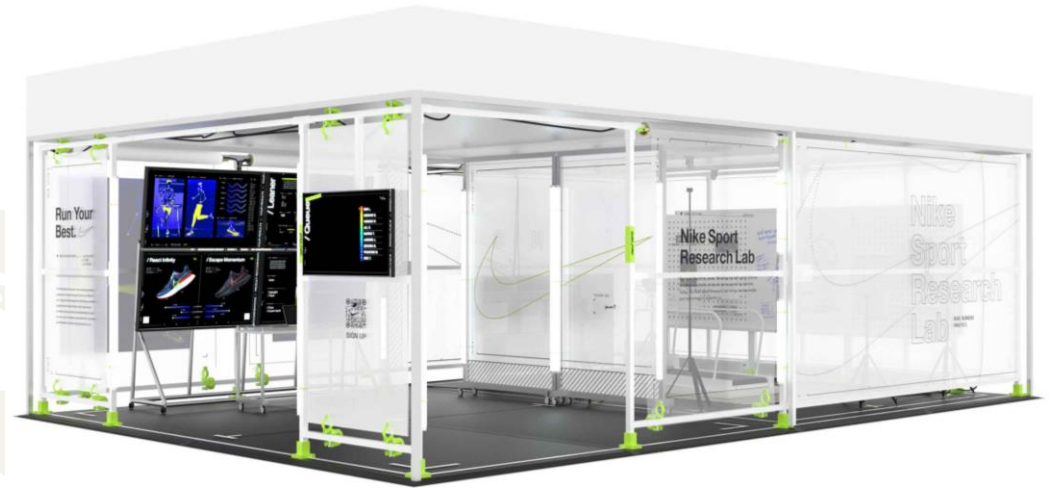
Development time was reduced
with CAD-CAE integration.



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Nike NSRL FORM

- The user's movement data is collected instantly.
- The data is converted directly into new base geometries.



LC1.4 - Best practices

After all;

CAD and CAE tools are transforming the design and engineering processes in the footwear industry.

When physical and digital tests are used together, more reliable results are obtained.

The future: **more digital, faster, more sustainable** shoe production.

