INFOGRAPHIC

3D PRINTING IN SPORTS AND THE OLYMPIC GAMES

2024

BENEFITS OF 3D PRINTING IN SPORTS

Lighter and stronger equipment

Through 3D printing it is possible to create products that are lighter and just as strong as those made by conventional methods. Weight is key to an athlete's performance and the material the equipment is made of can determine its speed and power.

Design flexibility

Additive manufacturing allows users to perfect products by creating different prototypes in a short time and at a low cost. Small modifications in textures, materials or weight can make a difference in the performance of athletes.

Customization

With the help of 3D scanning and additive manufacturing, it is possible to customize sports equipment to the anatomy of athletes. The manufacture of adapted prostheses for athletes with disabilities, for example, enables them to perform more comfortably.

Better protection

In high impact sports a good design in 3D software can optimize protections. With a scan of the athlete, it is possible to predict weak points that need protection and even consider past injuries to make the final product safer.

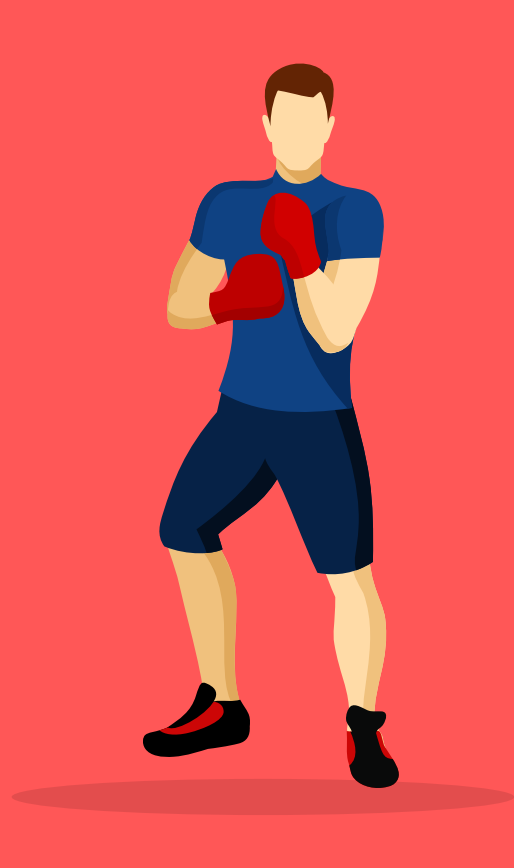
Technology for athletes

3D printing is also present in the manufacture of sensors and portable devices that track athletes' performance. The data resulting from these technologies serve as feedback for them to make the necessary changes and improve their performance.

Lower costs

The reduction in production costs offered by 3D printing makes it easier to create cheaper equipment to attract amateur athletes in disciplines that require very expensive equipment.

APPLICATIONS IN THE SPORTS WORLD



BOXING

3D printing can be implemented to create cushioning structures inside boxing gloves, such as those from Hayabusa, to better absorb and channel energy from impacts generated by boxers.

CYCLING

The use of optimized bicycle frames and lighter materials allows cyclists to perform better when racing. Companies such as Personomic or Posedla use the technology to create custom saddles and bike grips.

RUNNING

Many athletic footwear brands, such as adidas, New Balance and Puma, are turning to 3D printing to create more comfortable running soles that give runners a greater boost.

SNOWBOARD/SKIING

Union Binding Company has turned to 3D printing for prototyping and short runs of snowboard bindings. Tailored Fits, meanwhile, has used the technology to create ski boots that combine comfort and performance.

GOLF

Additive manufacturing with stainless steel was the method chosen to produce the KING Supersport-35 golf club from Cobra Golf, offering a more consistent and accurate swing for every shot.

BIATHLON

French company Athletics 3D is using 3D printing to create equipment to suit the needs of individual athletes. This includes everything from parts for rifles to poles and accessories that optimize performance on the field.

AMERICAN FOOTBALL

For added protection for American football players, the company Vicis has 3D printed custom pads that are integrated into helmets, reducing impact injuries. This use was also carried out by CCM Hockey for the creation of field hockey helmets.

BASEBALL

Louisville Slugger and Formlabs have joined forces to create next-generation baseball bats and equipment using additive manufacturing of composites and aluminum. According to the company, these prototypes should enable faster swings and harder hitting.

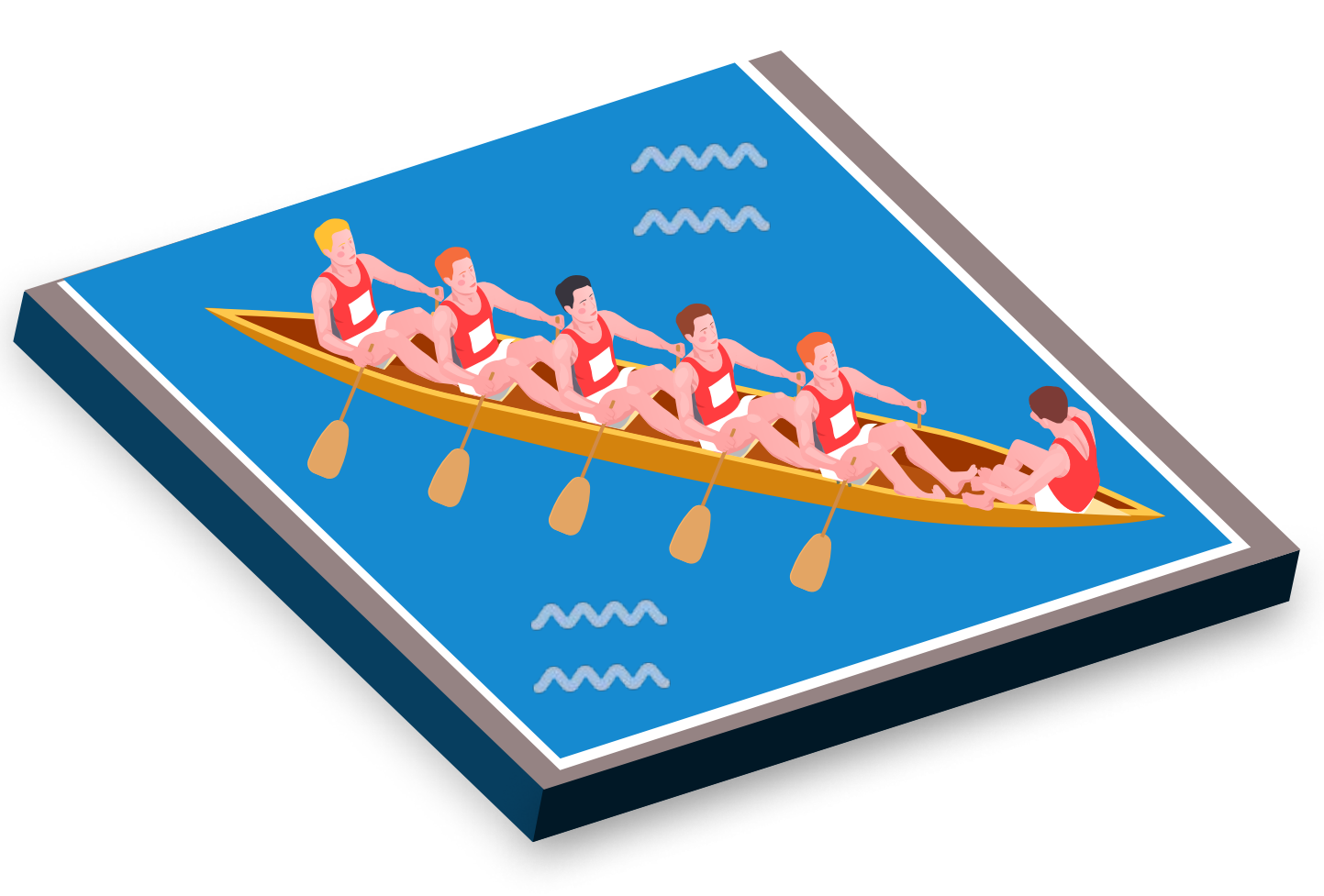
MOTORSPORTS

3D printing also plays a major role in motorsports, such as Formula 1 and motorcycling. Thanks to AM, high-precision prototypes and final parts can be created in much less time.

ADDITIVE MANUFACTURING IN THE 2024 OLYMPIC GAMES

RAM'EAUX" PAVILION

The French Aviron Federation has commissioned the construction of a pavilion at the Parc de la Villete site as part of the Olympic Games. A technique derived from additive manufacturing called "stratoconception" was used for the structure.

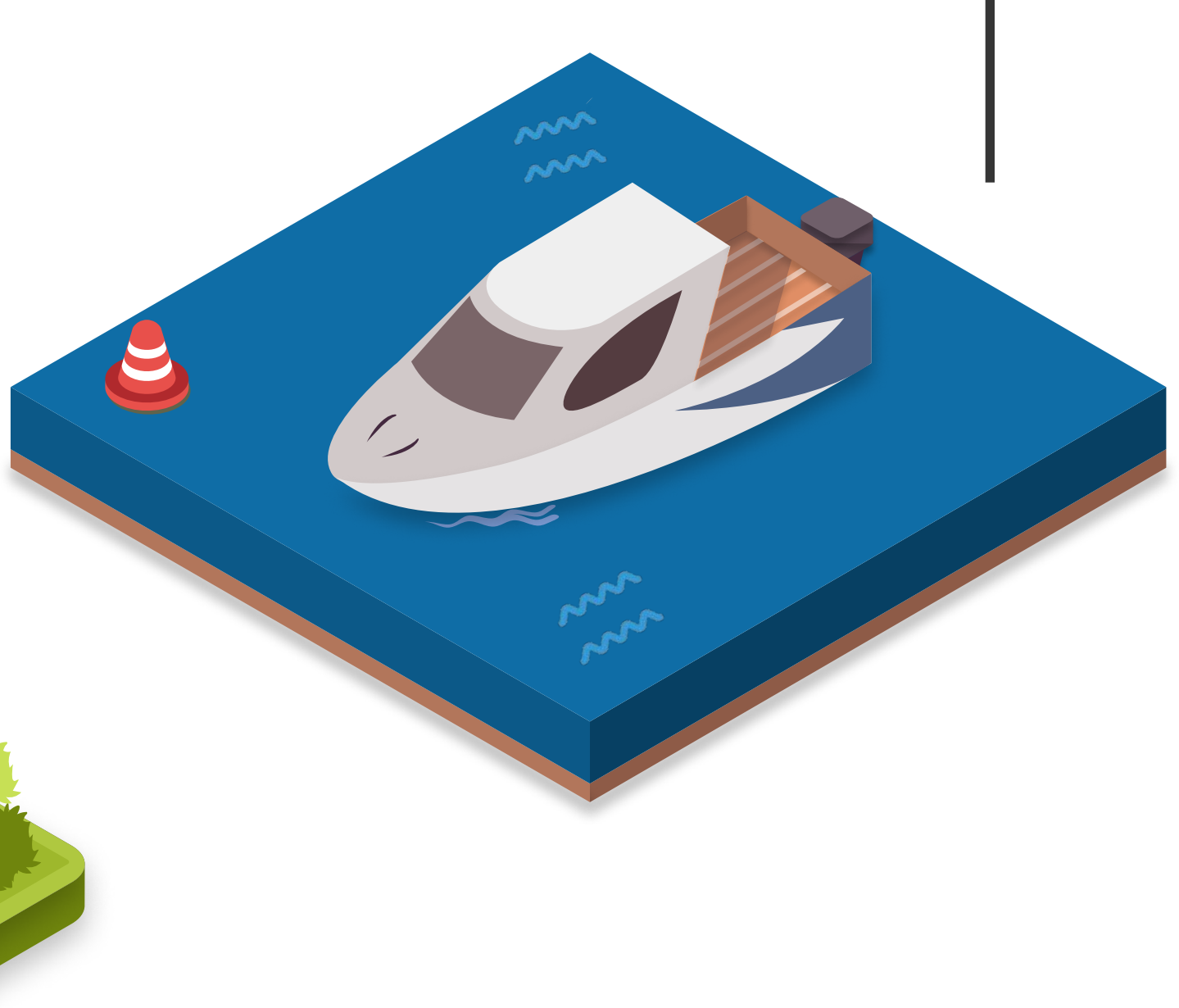


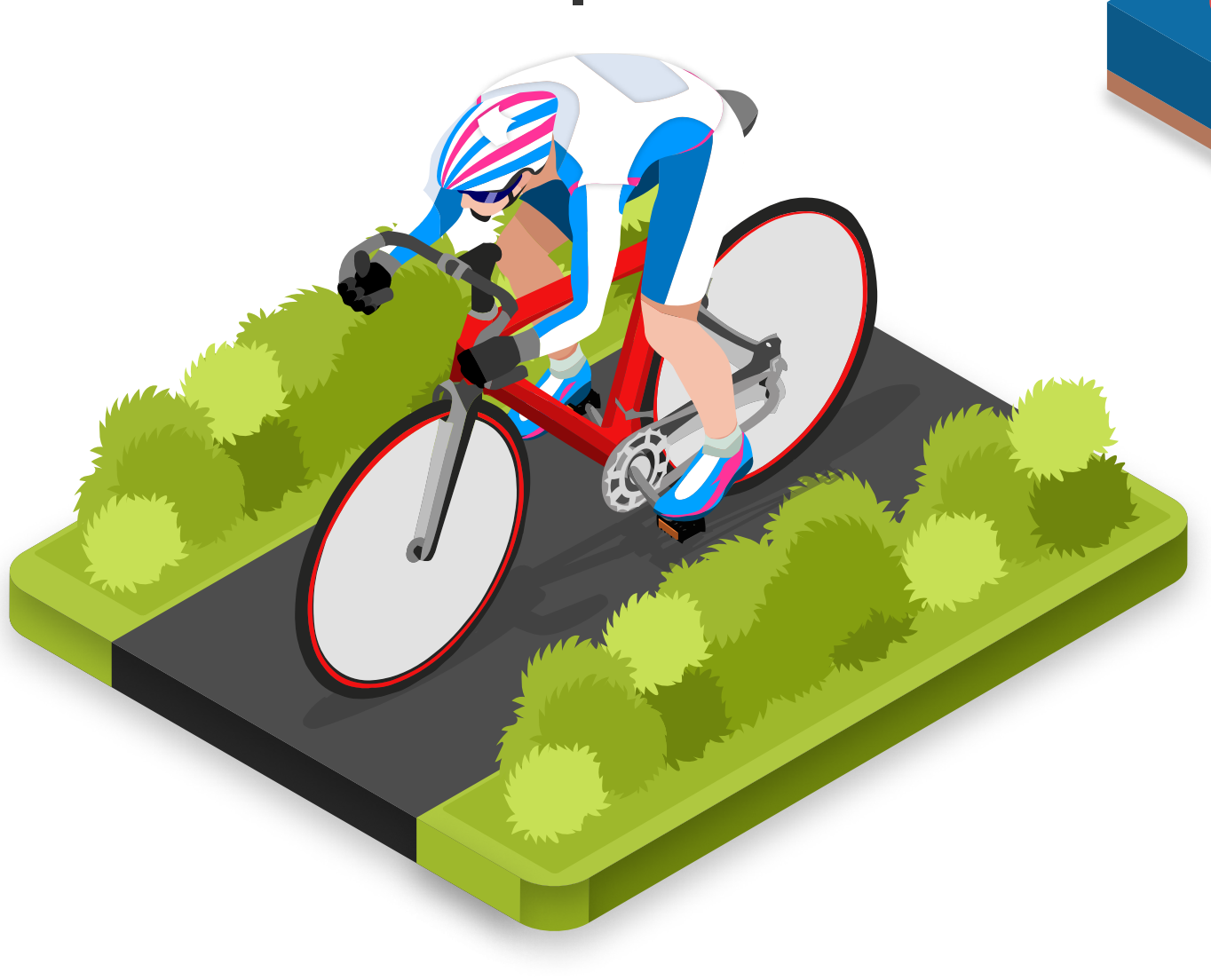
FERRY

State-of-the-art passenger ferries to debut alongside the Olympic Games. Companies Roboat, Holland Shipyards Group and Sequana Developpement are working together to develop 3D printed and electric ferries that will transport visitors autonomously on the Seine River.

THE X23 SWANIGAMI BIKE

The X23 Swanigami Bike was conceived by different Italian laboratories using additive manufacturing to obtain a more ergonomic and aerodynamic product. The creators have already confirmed that this model will be present at Paris 2024.





THE CONTRIBUTION OF AERONAUTICS

Airbus will lend its expertise in the additive manufacturing of prostheses and wheelchairs for athletes at the Paralympic Games.

TEAM GB

The cycling team from Great Britain will use bicycles with £55,000 3D printed frames. The design and manufacture has been undertaken by the Institute of Sport (UKSI) who have named the frame the UKSI-BC1.

KEY FIGURES FOR THE INDUSTRY

$1.65

trillion is the value that the global sporting goods market is expected to reach by 2033.

(PERSISTENCE MARKET RESEARCH)

12

sports disciplines where additive manufacturing is already being used as a production method.

(SAGE JOURNALS)

70%

of the parts made for Sculpteo's bicycle project are 3D printed.

(SCULPTEO)

100,000

soles for the adidas Future Craft 4D sneakers were additively manufactured with DLS technology.

(CARBON)

50 KG

is the amount that New Zealand Paralympian Anna Grimaldi managed to lift thanks to a prosthetic arm created with titanium 3D printing.

(GE ADDITIVE)

3 HOURS

was the time it took for Union Binding to create prototype snowboard bindings using 3D printing.

(HP 3D PRINTING)

42.5%

reduction in weight of the seat clamps of Pinarello bicycles.

(MATERIALISE)

TIMELINE

2015	Tailored Fits, an expert in additive manufacturing of custom footwear, including ski boots, is born.
2016	German cyclist Denise Schindler became the first person to compete with a 3D printed prosthetic leg during the Rio Paralympics.
2017	The French company Athletics 3D is born, a specialist in custom 3D printed biathlon equipment for athletes of all levels.
2018	Stratasys together with the U.S. luge team developed sled prototypes for the Winter Olympics in South Korea.
2019	Renault adopts additive manufacturing for about 100 parts on each of its two cars racing in Formula 1.
2020	Athlete Emma Wiggs used a 3D printed carbon fiber paddle that helped her take the gold medal in canoeing in Tokyo.
2021	For the Tokyo Olympics, P&G 3D printed around 98 podiums made from recycled plastics.
2022	Luxury car manufacturer Radford launches the Lotus Type G2-2, a sports car with about 500 parts printed with technologies such as SLA or FDM.
2023	The helmet used in the NFL Zero2-R Matrix ID Trench from Vicis is rated as the best protective gear of the year for its rugged design and light weight.
2024	Wilson launches the Airless Gen1 basketball. A 3D printed ball with a mesh design that allows it to bounce without needing to be inflated.

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