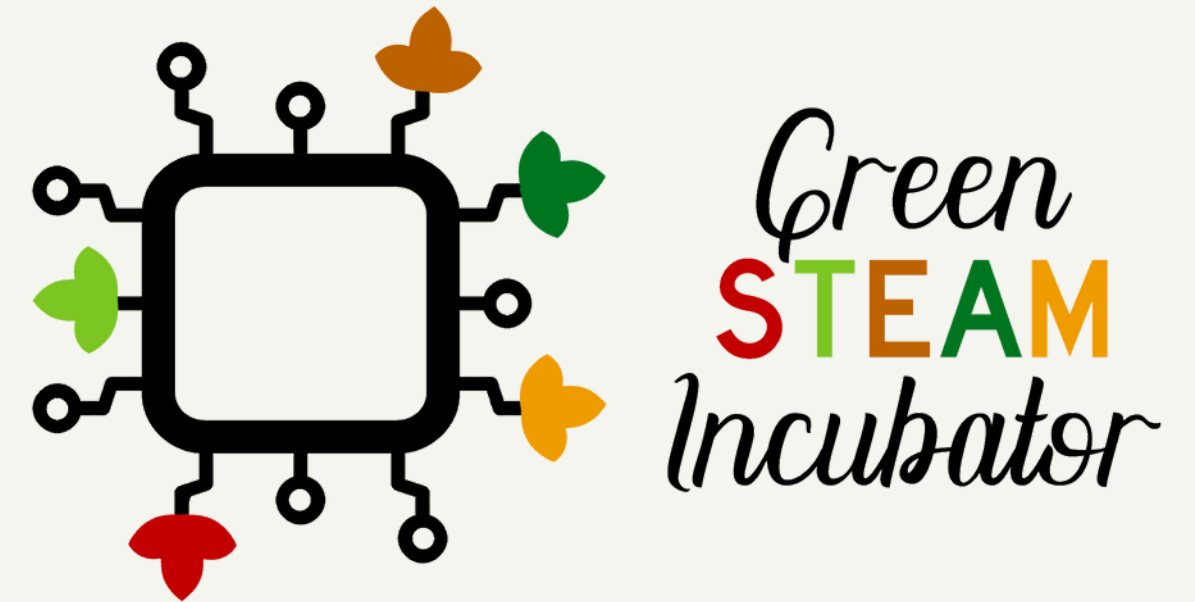


Introduction to 3D Design & 3D printing

The Green STEAM Incubator Project



Co-funded by the
Erasmus+ Programme
of the European Union



Partners

THE CONSORTIUM



The European Commission support for the production of this publication does not constitute endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein; Project Number: 2019-3-CY02-KA205-001692

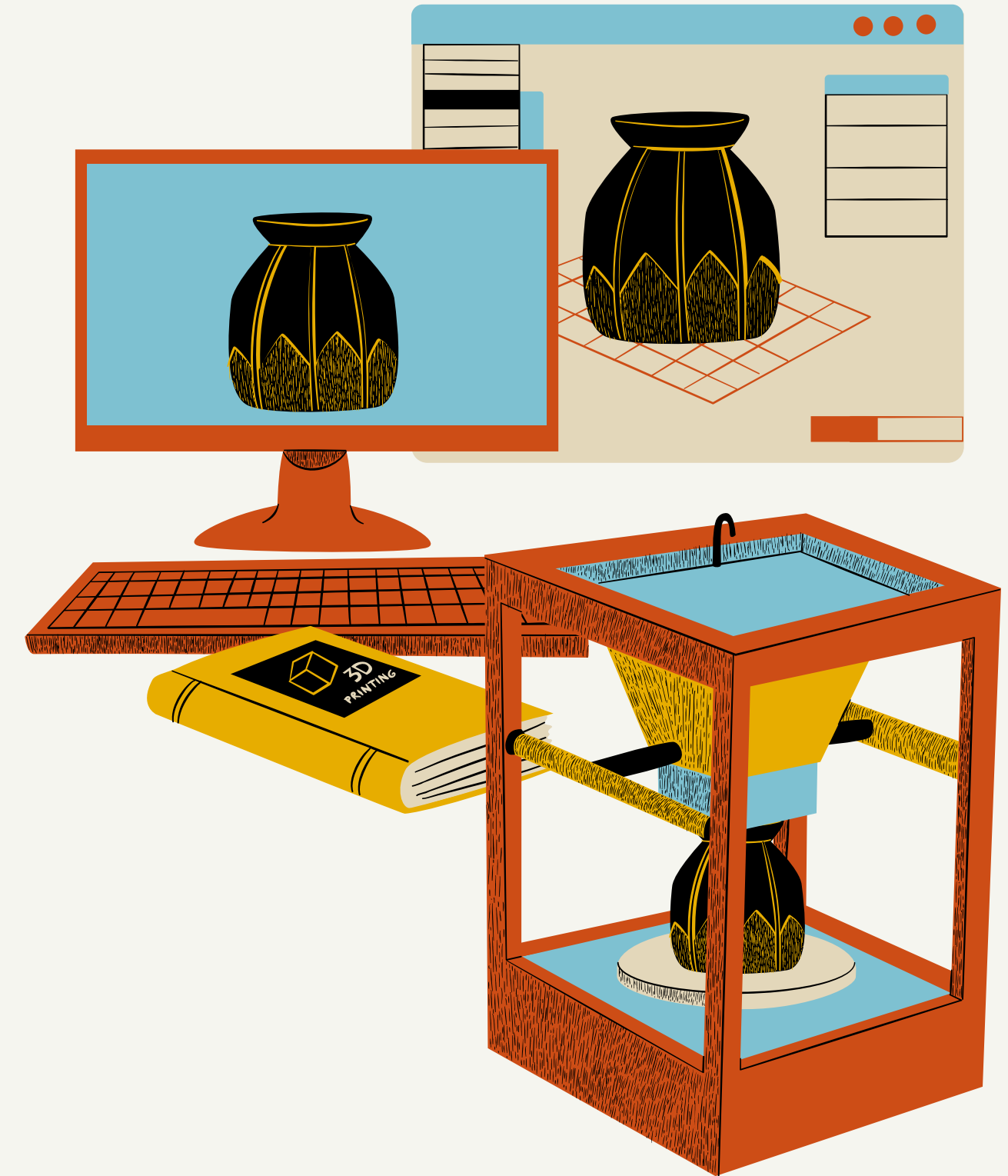
Co-funded by the
Erasmus+ Programme
of the European Union



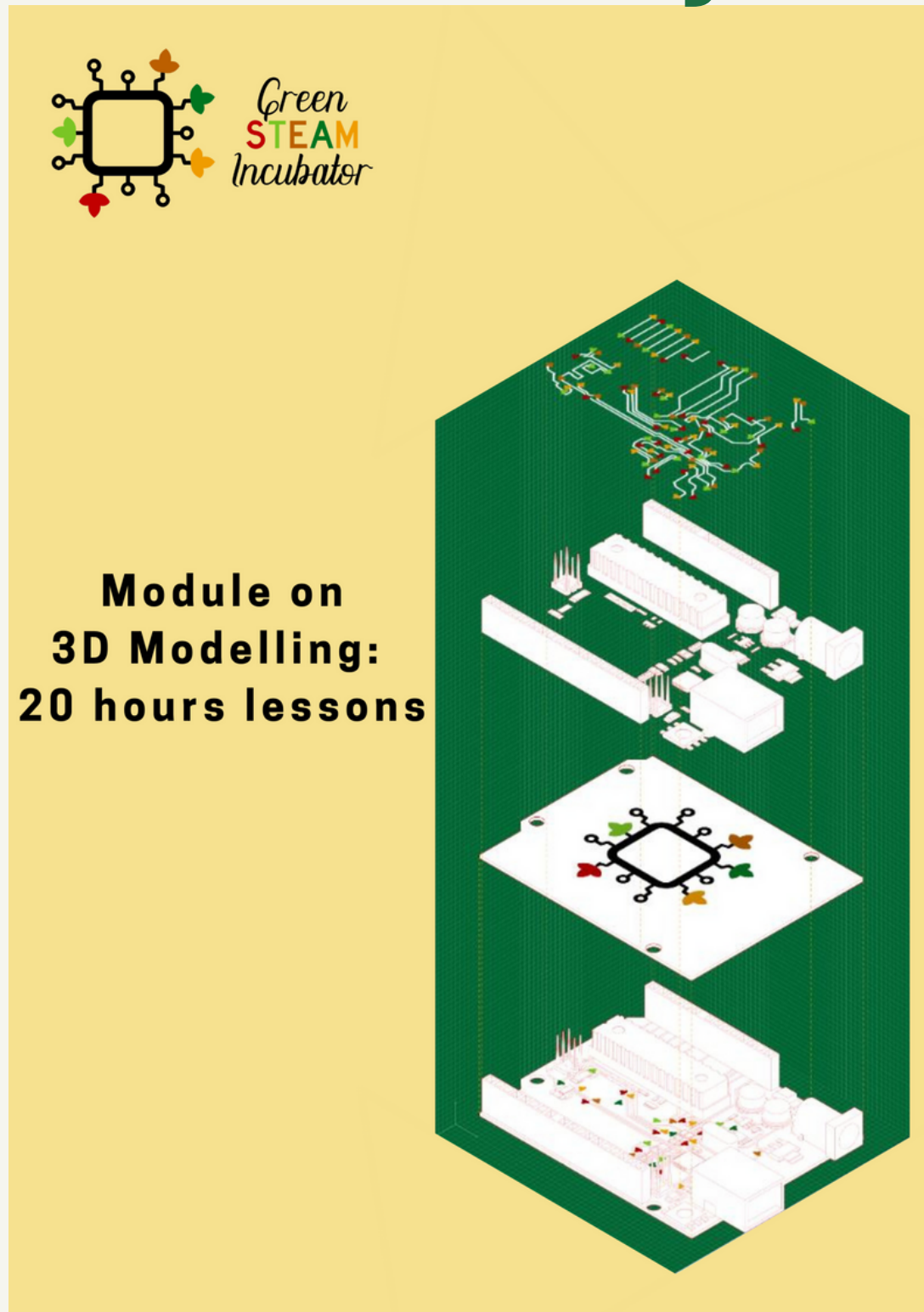
3D Printing for Agriculture: 5 Applications

3D printing is revolutionizing the manufacturing industry, but it can offer several advantages to agriculture:

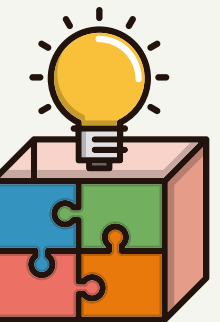
1. **Manufacturing Tools:** Custom tools can be expensive if manufactured traditionally, but 3D printing is more cost-effective and can create these products quickly.
2. **Urban Farming:** 3D printing can provide cost-effective solutions to urban farmers, in creating parts for things such as autonomous farming processes.
3. **Scale Models:** 3D printing scale models of the structures they wish to build, they can make the planning process more comprehensive.
4. **Replacement Parts:** When a piece of machinery breaks or malfunctions, it can cost a considerable amount of money to get a replacement.
5. **Indoor Gardening:** 3D printed gardening structures, agriculturists can make the most out of limited space.



Objectives and Results of IO4



✓ 3D modeling module accompanied by a handbook with possible environmental projects and eco-friendly solutions concerning the design and development of products that could be constructed by applying the acquired knowledge.

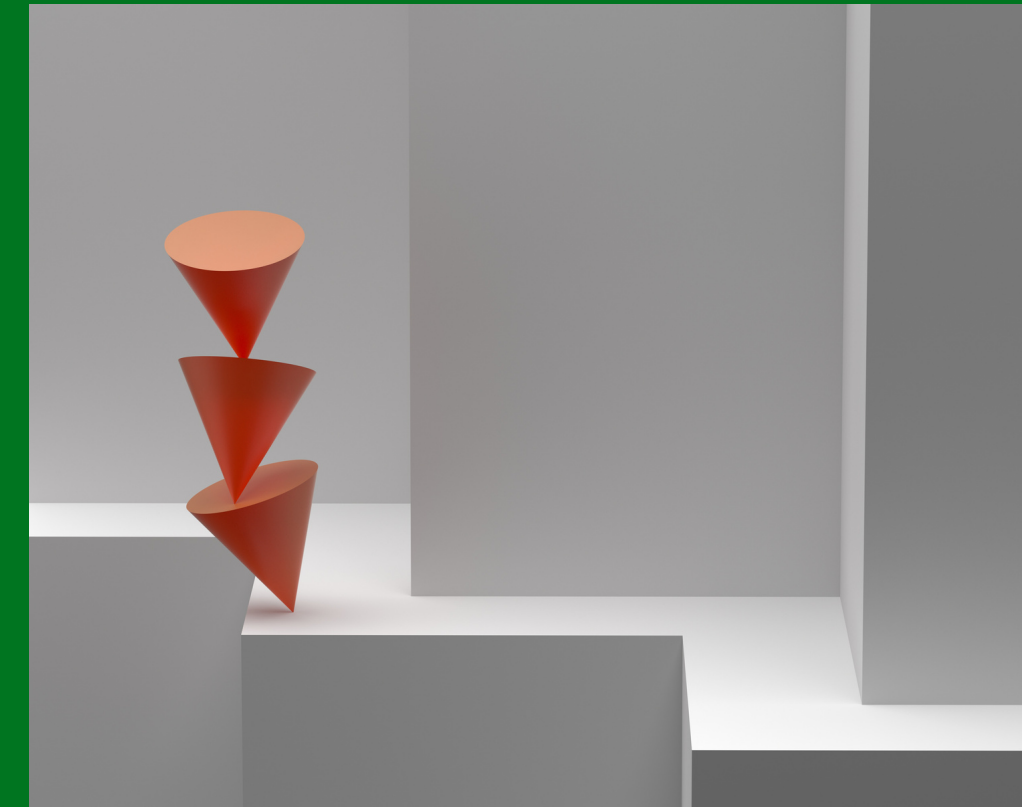


✓ The module has two main chapters, and in each one, there is a subchapter that contains themes that serve as a lesson, and in total, there are 20 hours of lessons formulated in a logical order.

NOVEMBER 2021

INTRODUCTION TO DESIGN AND 3D PRINTING, AND INITIAL CONCEPTS

- ✓ Discipline aimed at harmonizing the human environment, from the design of everyday objects to town planning. (Definition from Larousse)
- ✓ Industrial aesthetics applied to the search for new forms adapted to their function.
- ✓ A drawing or set of drawings showing how a building or product is to be made and how it will work and look. (Cambridge Dictionary)



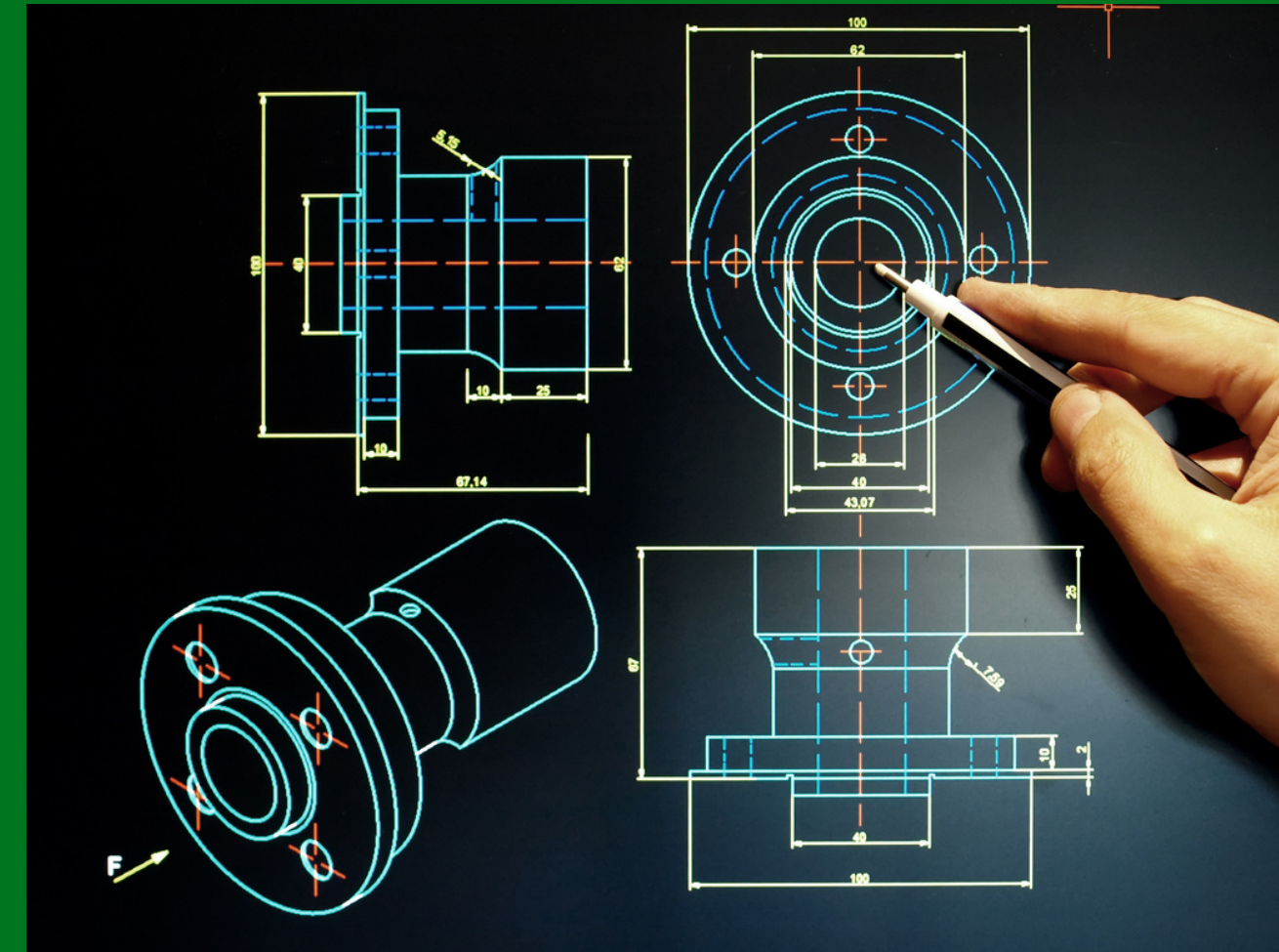
History of design

- ✓ Linked to the period of the Industrial Revolution: 1760-1840
- ✓ The arrival of the design and industrial revolution has opened a debate between the supporters of technology, industry, and those who advocate the beauty of the unique and original object.

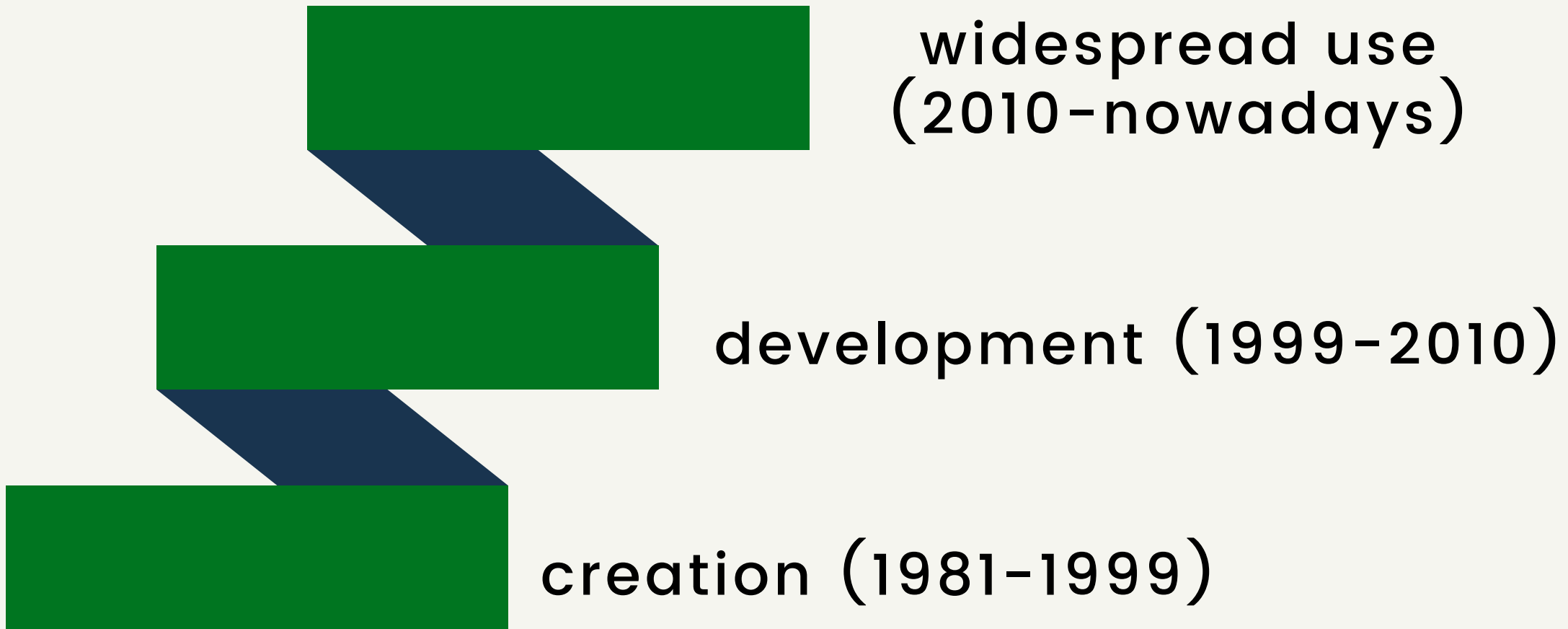


Design and CAD

- ✓ In the 50s, technical drawing methods improved (Patrick Hanratty and Ivan Sutherland)
- ✓ Introduction of computerized drawing machines and real-time computing
- ✓ Development and improvement of **CAD systems** = development of **3D printing**



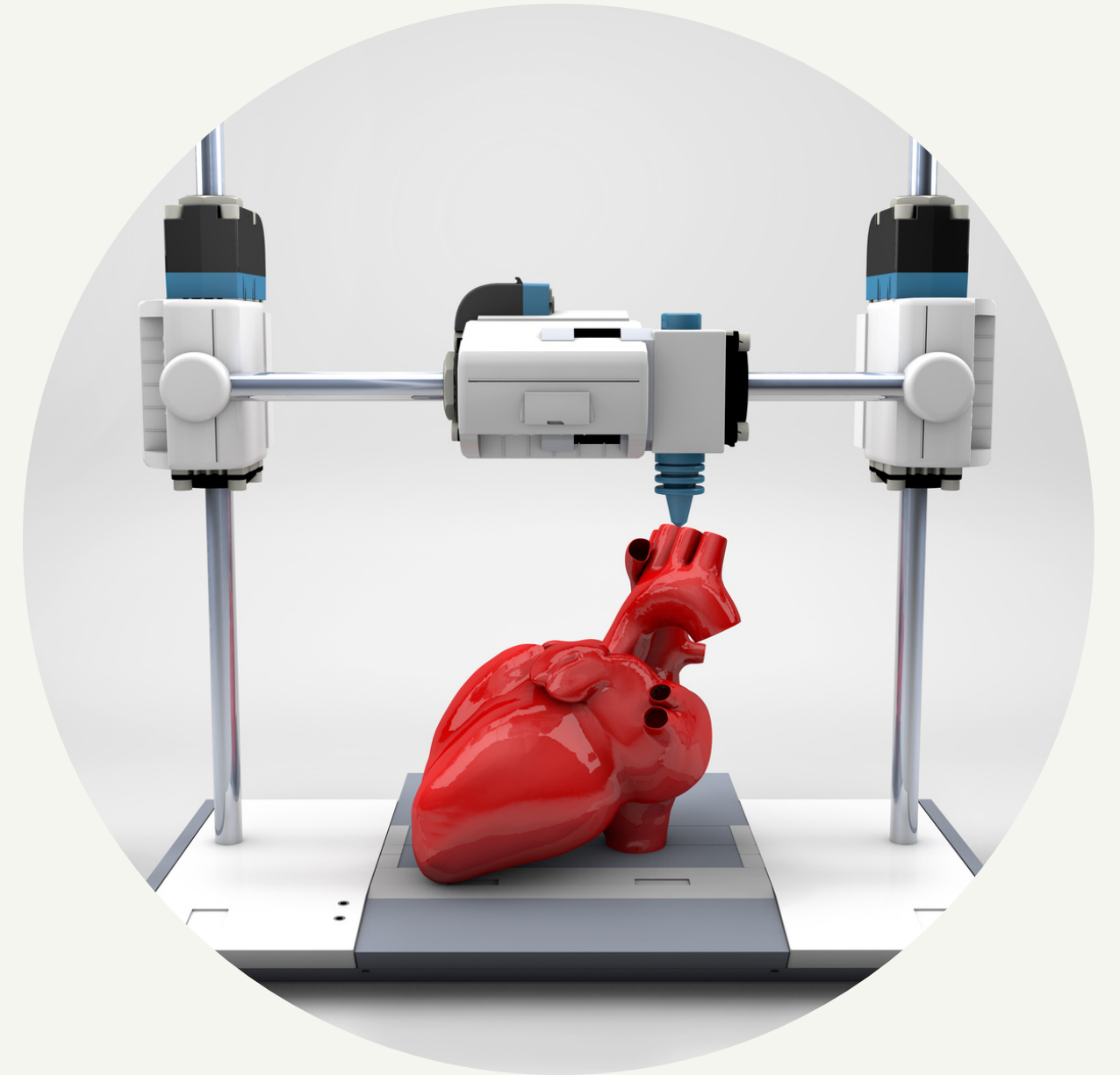
Development of 3D Printing



The first 3D printer ever created was made in 1983 by Chuck Hull.

Improvement of 3D Printing (1999 2010)

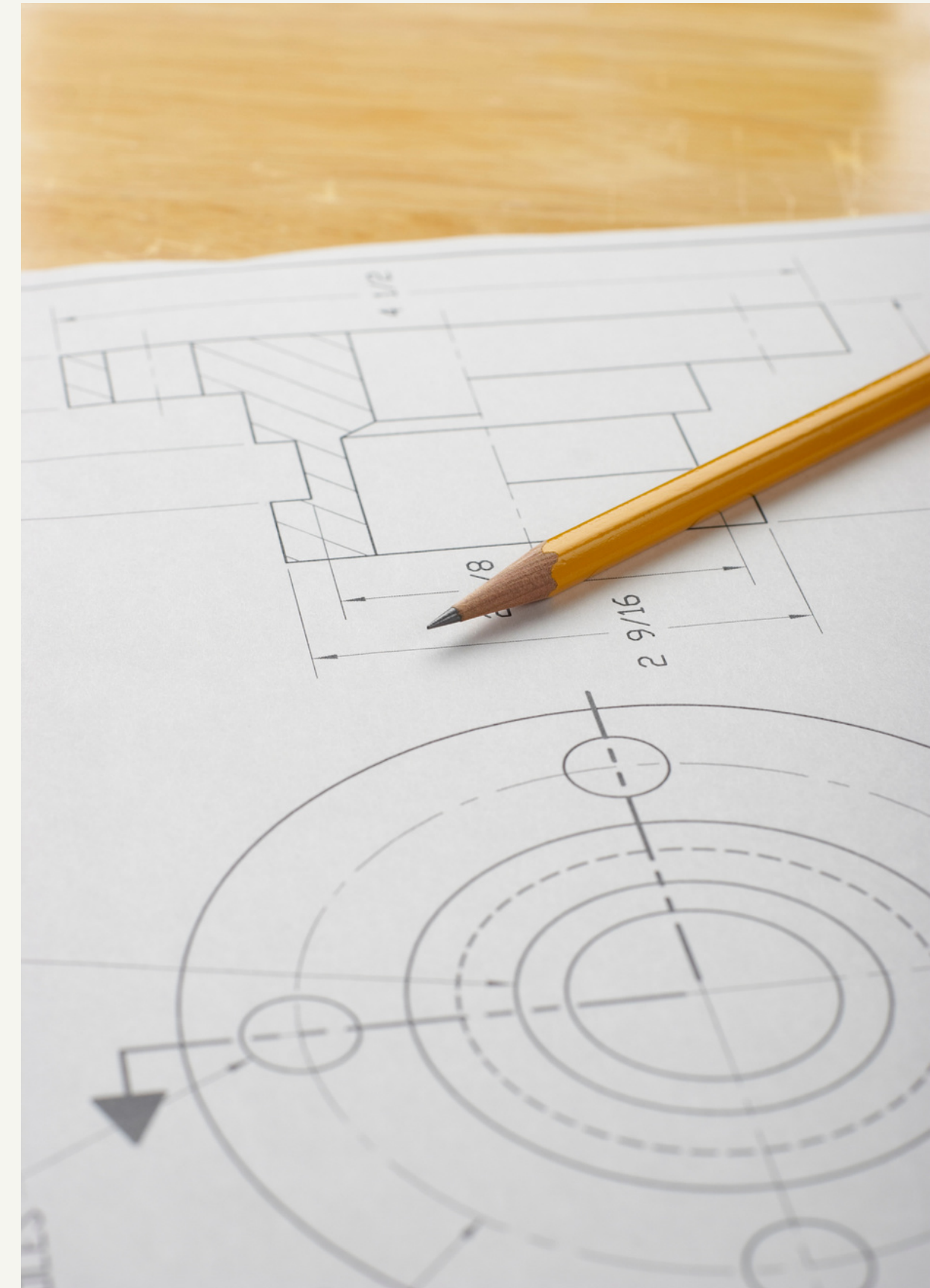
- ✓ Low cost prototyping
- ✓ Accessible and affordable
- ✓ Print with many materials: metals, glass, paper, concrete, wood
- ✓ Applications in medicine, industry, retail, construction, musical instruments, jewelry, household articles, clothing accessories, vehicles, food, parts of the human body





Cuts and Section View

- ✓ Section View: It shows the internal parts of a 3D model in a design
- ✓ Full View: It shows the interior of the object
- ✓ Half View: It removes the quarter of the object
- ✓ Offset View: It reveals the interior components.
- ✓ Revolving View: It shows the shape of an object by rotating the section 90 degrees
- ✓ Broken View: when only a part of the model needs viewing



AXONOMETRIC PROJECTION, COMPUTER AIDED DESIGN (CAD) AND SOFTWARE

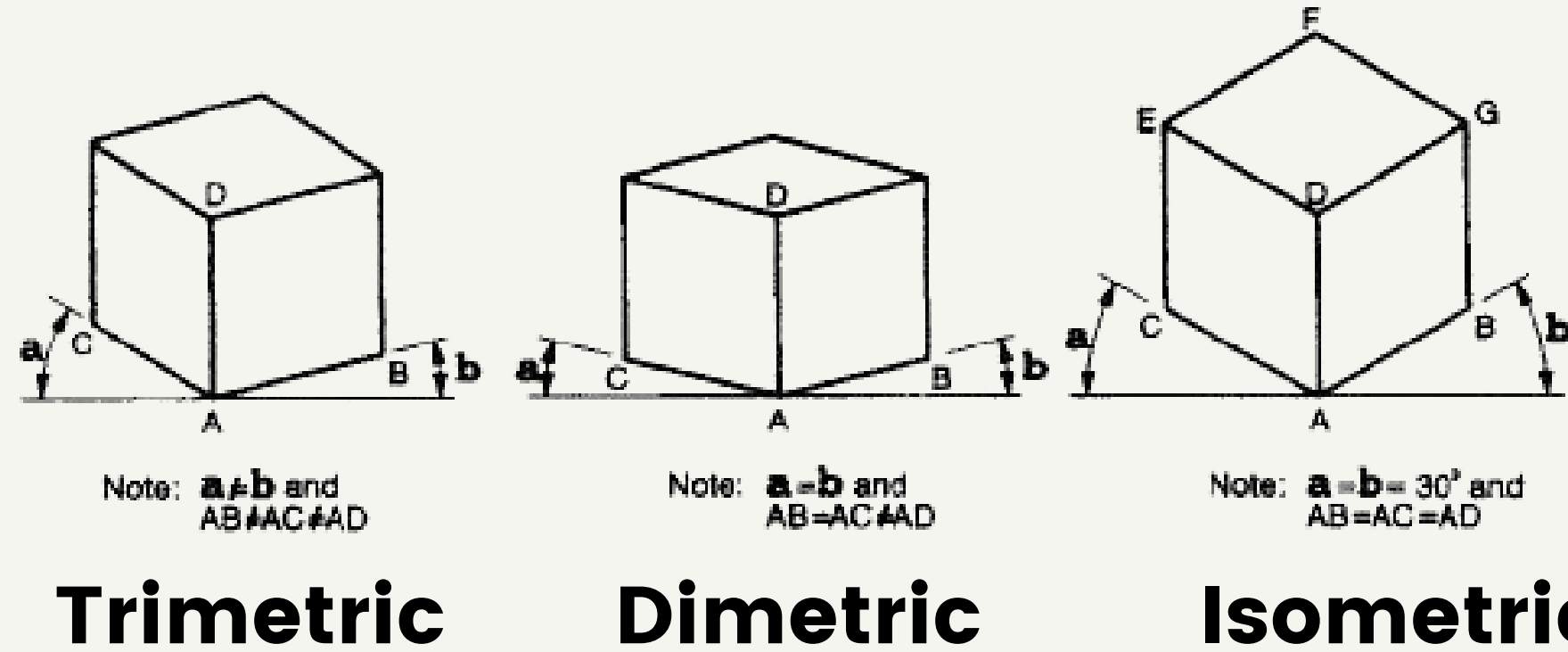
Axonometric Projection:
creating pictorial drawings, where
the plane of projection is
perpendicular to the lines of sight.

**Isometric
Projection:**
all contractions
are the same.

**Dimetric
Projection:**
two contractions
are the same.

**Trimetric
Projection:**
no contraction is
the same

AXONOMETRIC PROJECTION, COMPUTER AIDED DESIGN (CAD) AND SOFTWARE



Let's Take
A COFFEE
Break

