



Envisioning the Circular Economy

A survey of leaders in the sector

9/24/2020



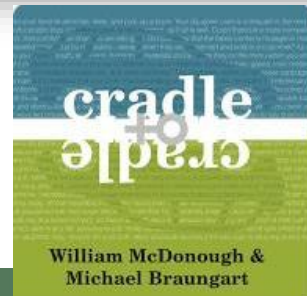
Housekeeping

- Agenda
 - Scott Fister, NC DEQ
 - Ryan Hunt, Algix/Bloom
 - 1-2 Q+A
 - Emily Neville, Reborn Clothing Co.
 - 1-2 Q+A
 - Q&A Session & Discussion
- Q+A- please remember to use the chat feature and write in your questions.
- Disclaimer: This presentation is intended for educational and inspirational purposes only. As a state government agency this is not an endorsement or recommendation of any of the products, services or companies here within.

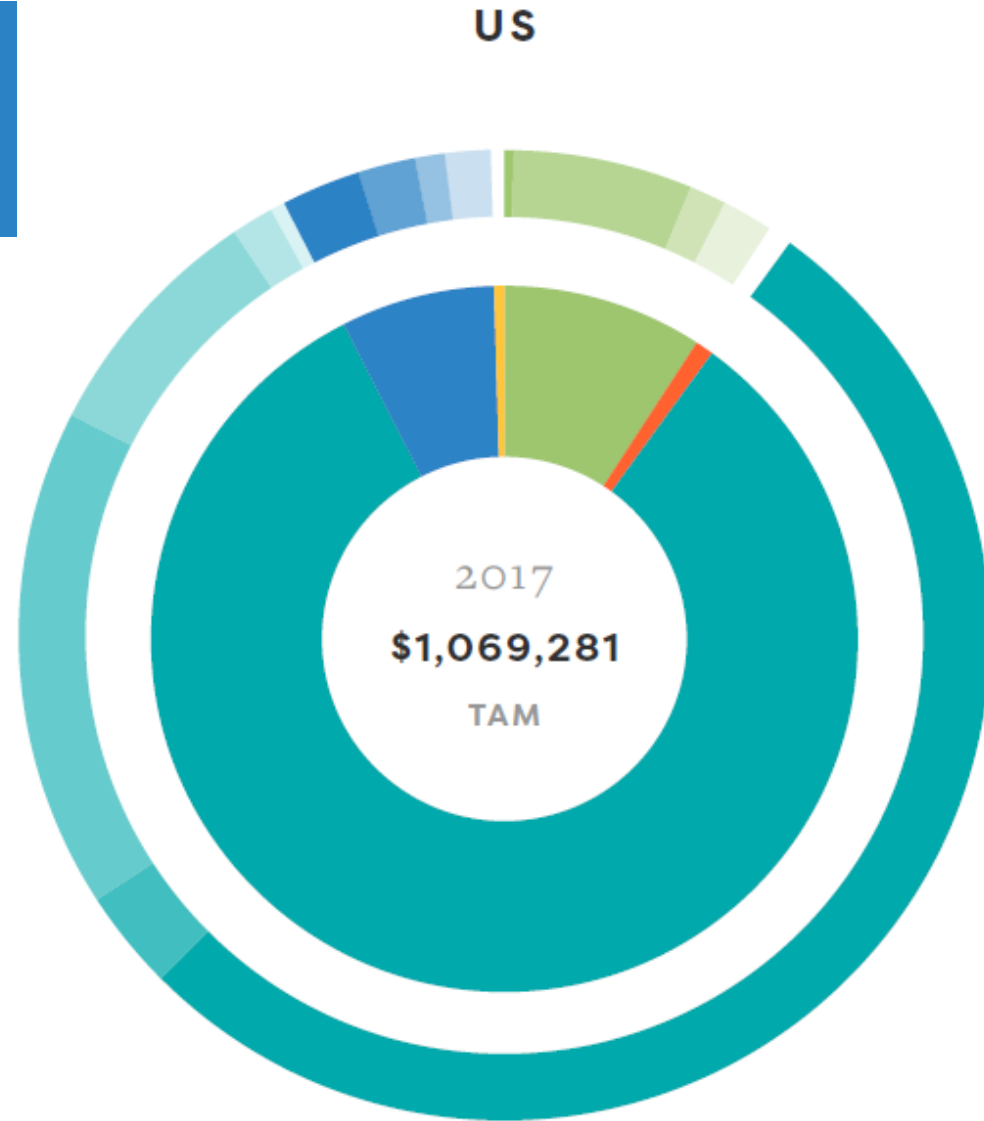


What is a Circular Economy?

NUTRIENT METABOLISMS



Total Available Markets for "carbontech"



| PRODUCT | \$ IN MILLIONS |
|------------------------------------|--------------------|
| BUILDING MATERIALS | \$101,130 |
| ● Cements | \$1,240 |
| ● Concretes | \$65,000 |
| ● Asphalts | \$12,190 |
| ● Aggregates | \$22,700 |
| WOOD-BASED PANELS | \$12,508 |
| FUELS | \$882,149 |
| ● Gasoline | \$543,400 |
| ● Jet Fuel | \$38,760 |
| ● Diesel | \$186,660 |
| ● Natural Gas | \$83,705 |
| ● Ethanol | \$23,550 |
| ● Biodiesel | \$6,074 |
| PLASTICS | \$71,694 |
| ● High density polyethylene | \$25,393 |
| ● Linear Low density polyethylene | \$20,502 |
| ● Low density polyethylene | \$11,522 |
| ● Polypropylene | \$14,276 |
| CHEMICALS | \$1,800 |
| AGRICULTURE AND AQUACULTURE | N/A |
| CONSUMER GOODS | N/A |
| TOTAL | \$1,069,281 |



THE ALGAE FOODTECH LANDSCAPE, V. 1.3 DRAFT

FOOD

CONSUMER GOODS

MACRO



MICRO



MACRO



NATURLI'

MARVELOUS FOODS

OCEANIUM

OMEGA-3



AGRICULTURE



INDUSTRIAL APPLICATIONS



HEALTH & BEAUTY



NONPROFITS



HOUSE & HOME



& Olivia Fox Cabane

This map represents a view of the FoodTech segment of the Algae Industry. It is intended for educational purpose and makes no claims as to the accuracy of the information displayed.

FOOD

| | | | | | |
|------------------------------|--|---|---|--|---|
| <p>CONSUMER GOODS</p> | | <p>JERKY</p> <p>JEWELS OF THE FOREST</p> <p>Pan's mushroom jerky</p> | <p>COFFEE</p> <p>FOUR SIGMATIC</p> <p>MUSHROOMCUPS</p> | <p>KITS</p> <p>BACK TO THE ROOTS</p> <p>100% Monkey Mushrooms</p> | <p>INGREDIENTS</p> <p>EGG WHITES</p> <p>BiosciencZ</p> <p>MycoTechnology</p> <p>Sylvan</p> <p>EMERGY LABS</p> <p>3FBIO</p> |
|------------------------------|--|---|---|--|---|

HEALTH & BEAUTY

FASHION

ACCESSORIES

∞ nat2

FUNGAL FUTURES

MYCOWORKS

TEXTILES

mogu

Bolt Threads

muskin

PACKAGING

KROWN

mogu

ecovative

OFFICE

ecovative

ENVIRONMENTAL REMEDIATION

FUNGI PERFECTI

FEED

WILD EARTH

HOUSE & HOME

CONSTRUCTION

mogu

KROWN

BIQHM

FURNITURE

mushlume

ecovative



BIOPREFERRED PROGRAM COMPANIES MAP

The BioPreferred Program Companies Map tool assists in locating companies with biobased products within a particular state, zip code, or congressional district. Companies referenced on this map have chosen to list their company and product information in the BioPreferred Program Catalog.

Display companies with...

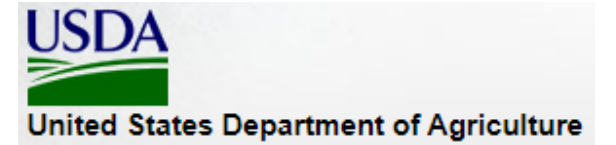
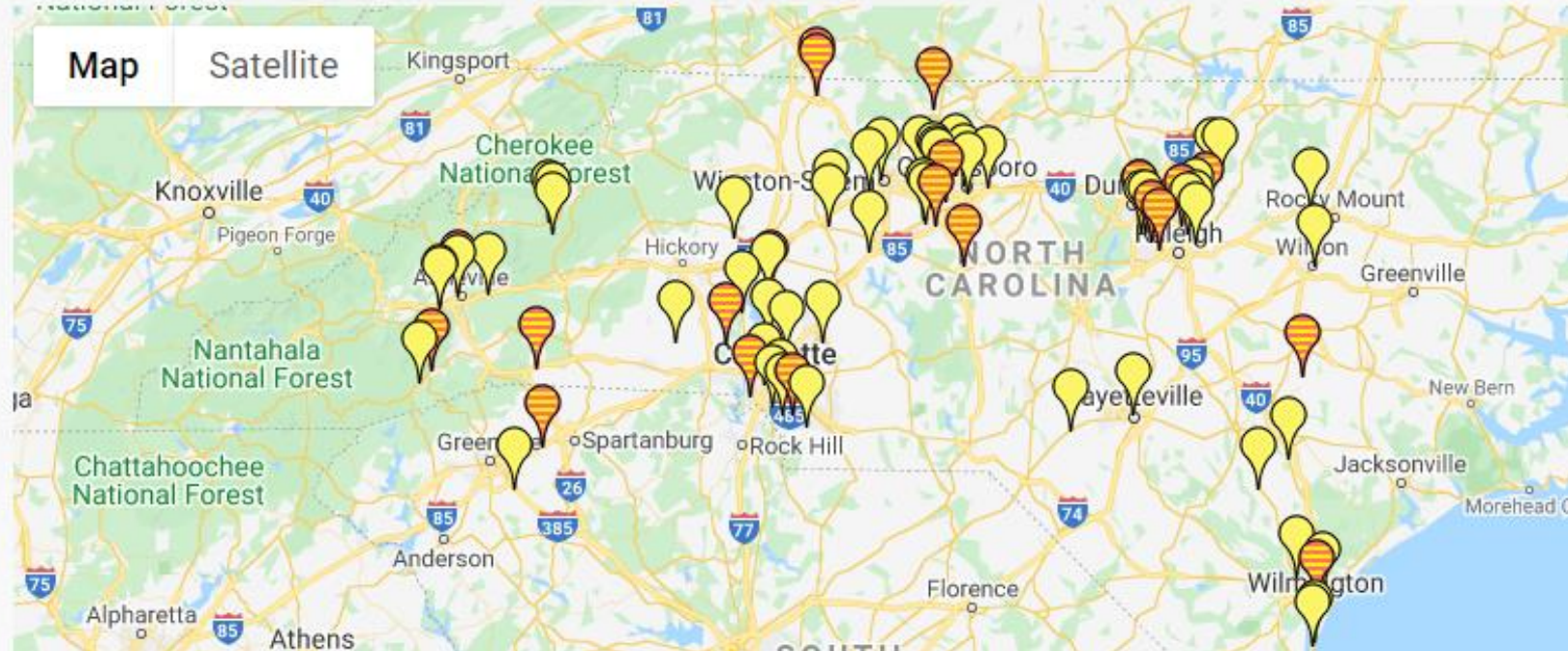
- Certified Products
- Mandatory Federal Purchasing Products
- Both

Filter by...

- None
- My Location
- Zip Code
- State
- City
- Country

Set filter options...

State



Textiles

[AlgiKnit Inc.](#) is a biomaterials company integrating science and design into textile production. AlgiKnit is creating durable yet rapidly degradable yarns.

We aim to operate in a closed loop product lifecycle, utilizing materials with a significantly lower environmental footprint than conventional textiles, to bring sustainable bio-based textile alternatives to the footwear and apparel industries.

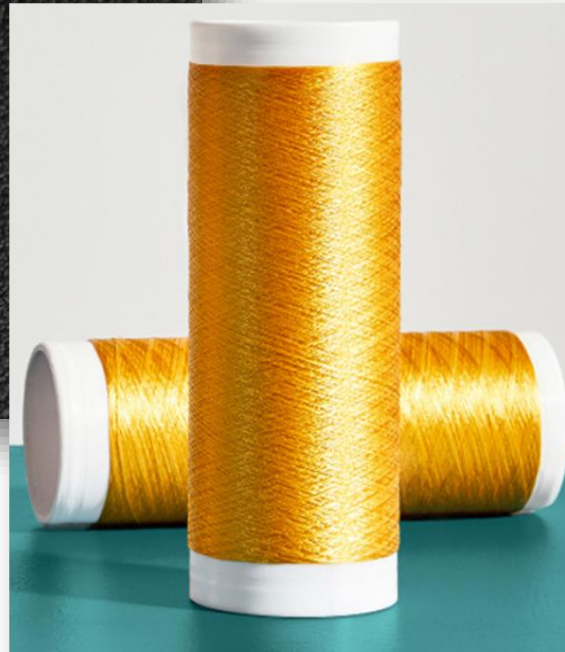
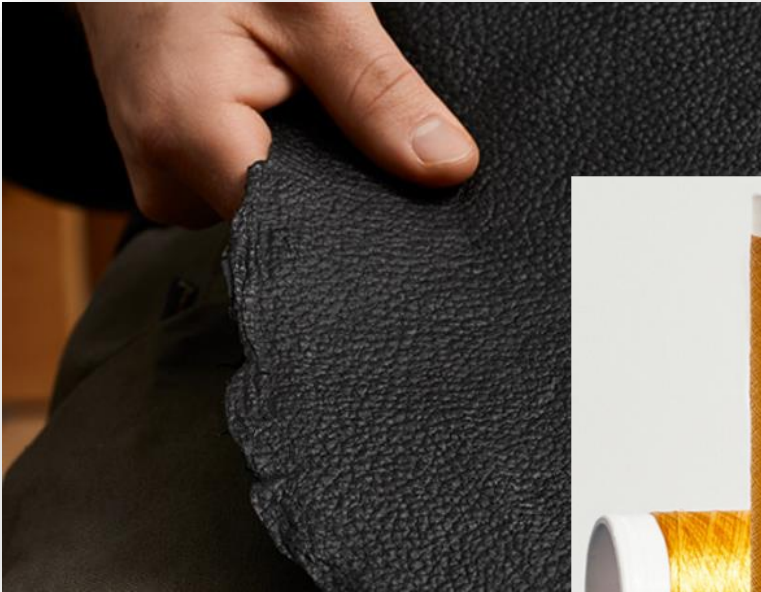


We currently focus on renewable dyes especially for the textile industry

[PILI Inc.](#)

[Bolt Threads](#)

We developed Mylo from mycelium cells by engineering it to assemble into a supple yet durable material that has the potential to biodegrade and can replace real and synthetic leather.

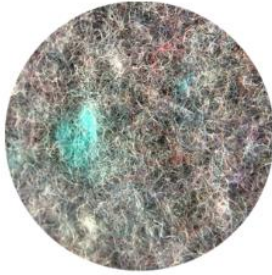


Textiles cont.

WOVEN STRUCTURES



PLAIN WEAVE



FLEECE



BLUE CIRCULAR KNIT



GRAY CIRCULAR KNIT



TWILL

At [OSOMTEX®](#), we repurpose millions of pounds of discarded post-consumer and post-industrial textile waste directly from brands and the general supply chain to create high-quality upcycled yarns and fabrics. Our process uses No water, No dyes, and NO harsh chemicals, making it the best sustainable solution to help reduce the negative impact of creating new clothing and virgin fibers, saving millions of gallons of water every year and also our people, rivers, and oceans from pesticides and toxic waste.



REBORN CLOTHING CO.



Packaging



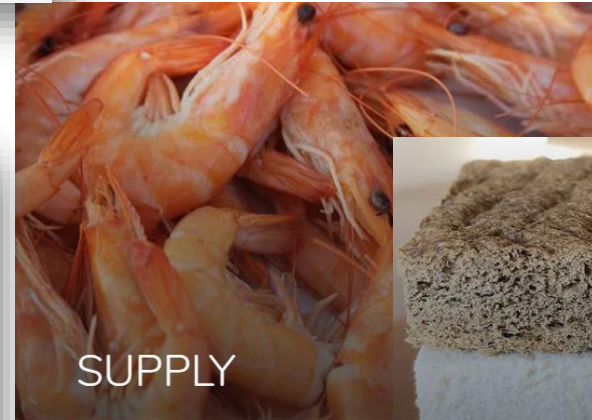
GREENCELLFOAM



Oxygen stays outside



Apeel adds a layer of plant-derived protection to the surface of fresh produce to slow water loss and oxidation — the factors that cause spoilage. It sounds simple, but it took a lot of figuring out.



SUPPLY

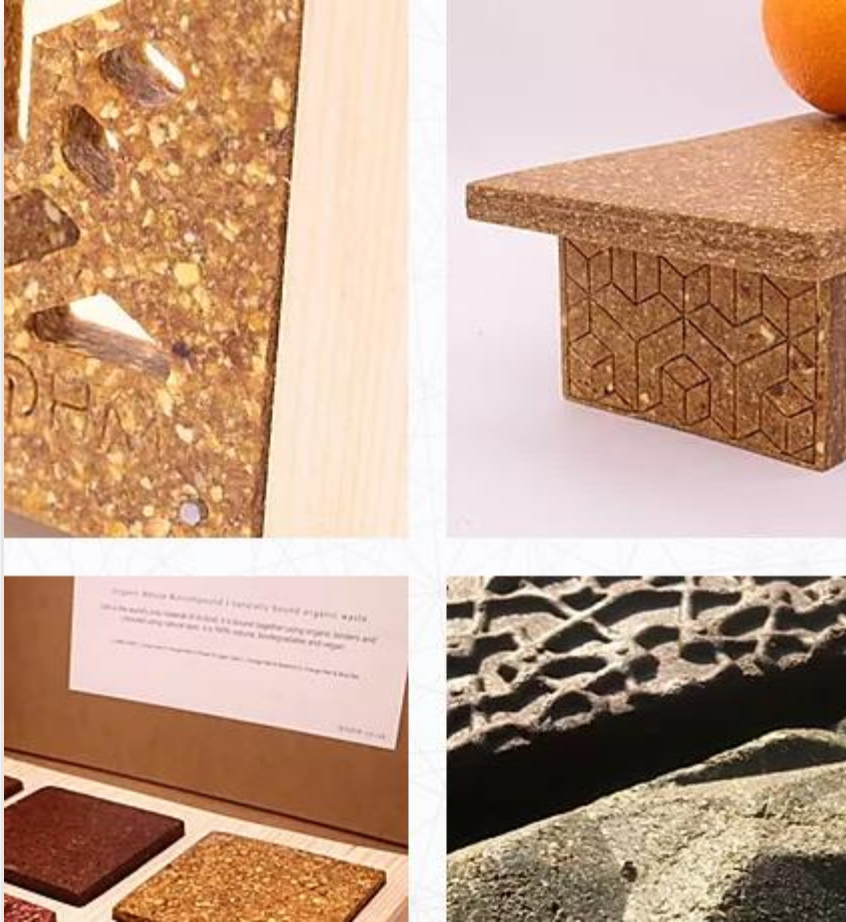


CRUZ FOAM



PRODUCT

Building Materials



Ecovative

Using our Mycelium Foundry, we are collaborating with companies to create alternative meat products, biodegradable packaging materials, animal-free leather and more.

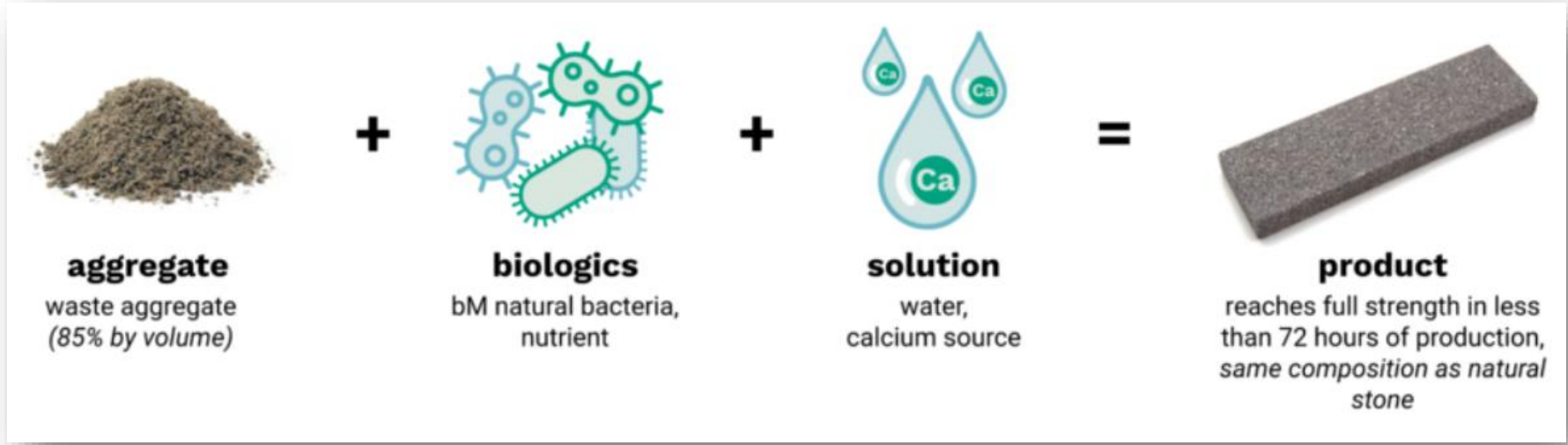
Orb is 100% biodegradable, vegan, sustainable and renewable. We achieve this by sourcing waste by-products from the food production or agricultural sectors and processing it into a homogenous filler which is bound together with our unique and completely organic binder to form an affordable and sustainable replacement for wood-based sheet materials.



Consumer
Materials



Building Materials Cont.



 **bioMASON**[®]
building with nature



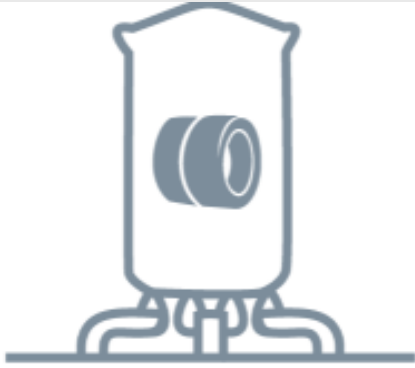


— opus 12

We have developed a device that recycles CO₂ into cost-competitive chemicals and fuels. Our technology bolts onto any source of CO₂ emissions, and with only water and electricity as inputs, transforms that CO₂ into some of the world's most critical chemical products.



Tires



PRTI Thermal Demanufacturing



DEPolymerization™
Recovers 98% of Used Tires
Sustainably & Efficiently



DESolv™ 53%
Oil, Fuel, Solvents



D-E Black 37%
Recovered Carbon Black



D-E Gas™ 8%
Propanes & Butanes



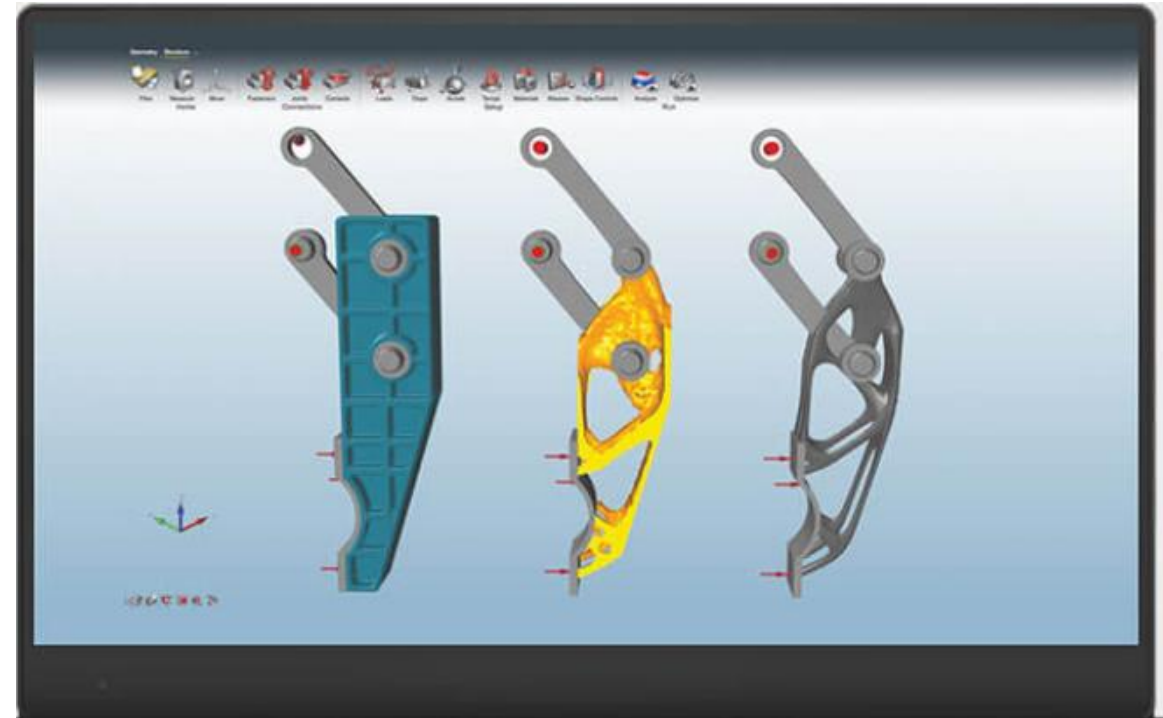
Business Services

[BIOFABRICATE](#) is a platform for biomaterial innovators and consumer brands growing a sustainable future.

We're building the backend of the bioeconomy. Biology is everywhere. At [Ginkgo](#), we see the potential for biology to transform all industries. Working with our partners and growing ecosystem, we design custom organisms that bring new products to life for countless applications.



For more than two decades, [Altair OptiStruct™](#) is the original topology optimization structural design tool



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