

GROWBOTICS

Toward a Circular Space Economy: Overcoming
Blockers for Sustainability

ESA Clean Space Industry Days
October 2023

GROWBOTICS 

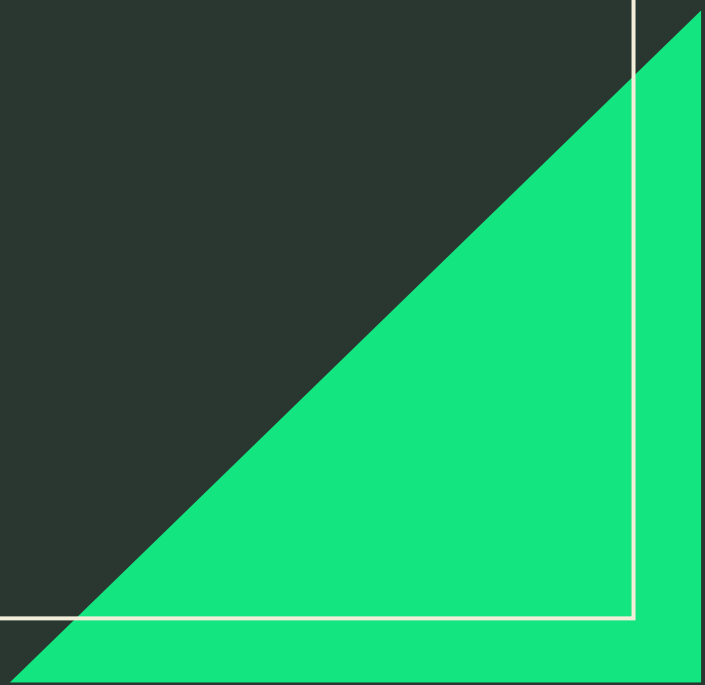
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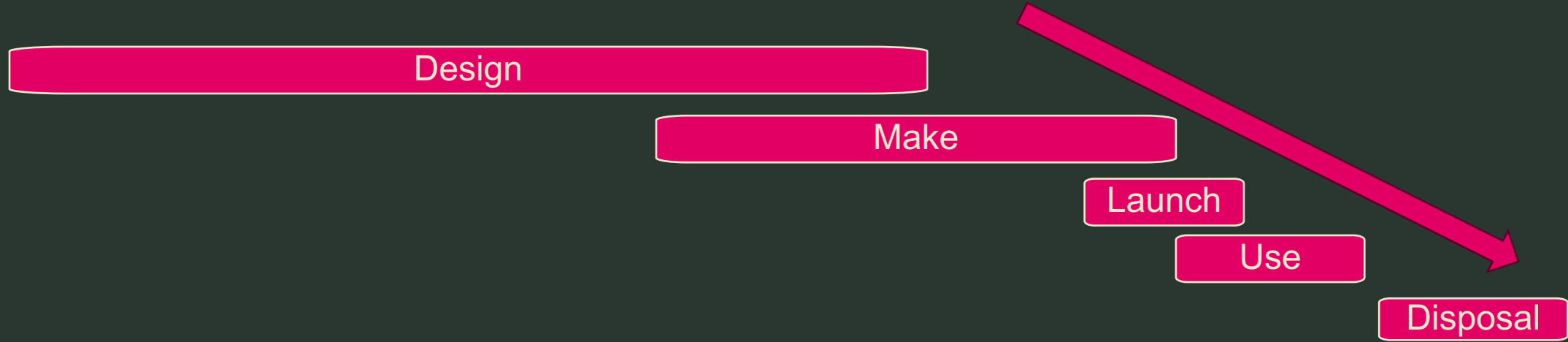
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- Market Drivers & Blockers
- The importance of design
- What can we all do to change
- About Growbotics

Mission

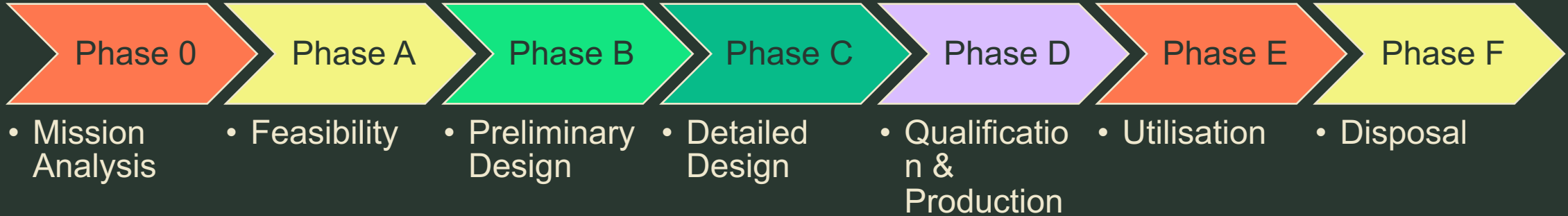
Enable a circular on-orbit economy, by design.



Current Approach



ESA Typical
Mission Phases

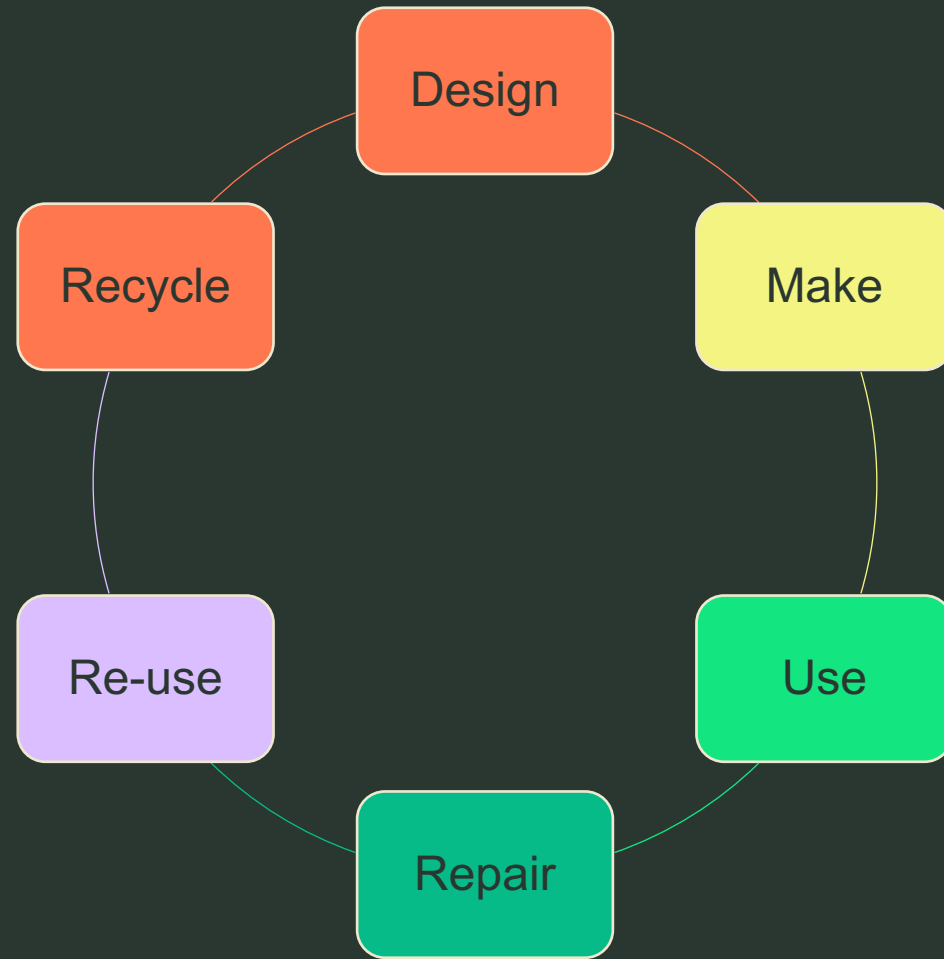


Eco design minimizes
environmental footprint
throughout lifecycle

Circular design is
resource efficient,
avoiding waste

We must do both...

Circular Approach



Innovations in...

Business
Models

Operational
Models

New
technologies

Supply Chains
& Distribution
methods

Enable...

Repair &
Maintenance

Upgrade

Re-Use on orbit

Less mass to be
launched, spacecraft
design no longer
constrained by
launchers

Reduction in
costs

Increased in
capability

Longer Lifetimes
Higher Revenues

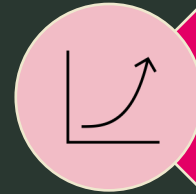
High Quality

Sustainability
Business
Flexibility

Why now?



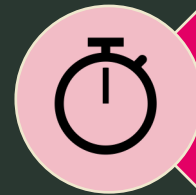
*The best time to start
was yesterday.
The next best time is
now.*



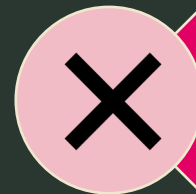
Number of satellites
launched continually
increasing



Docking & Life Extension
has been proven
commercially



We are still relatively
near the start of orbital
economic activities



3 Recent GEO
spacecraft failures
shortly after launch

Blockers & Drivers

Cost

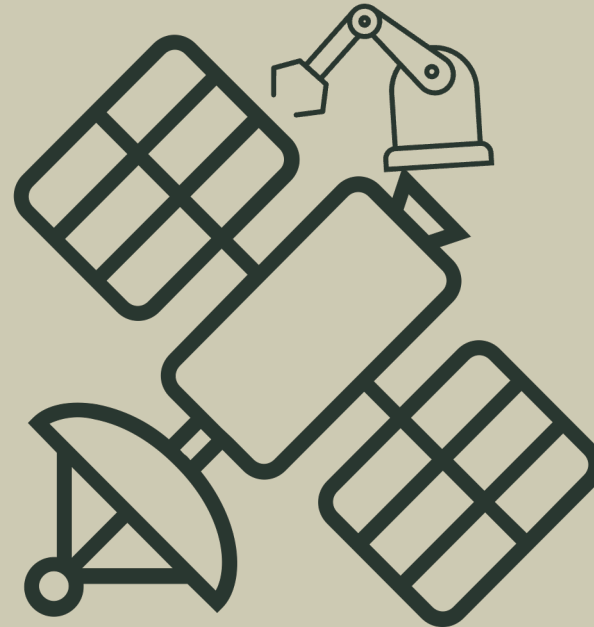
Complexity

Risk

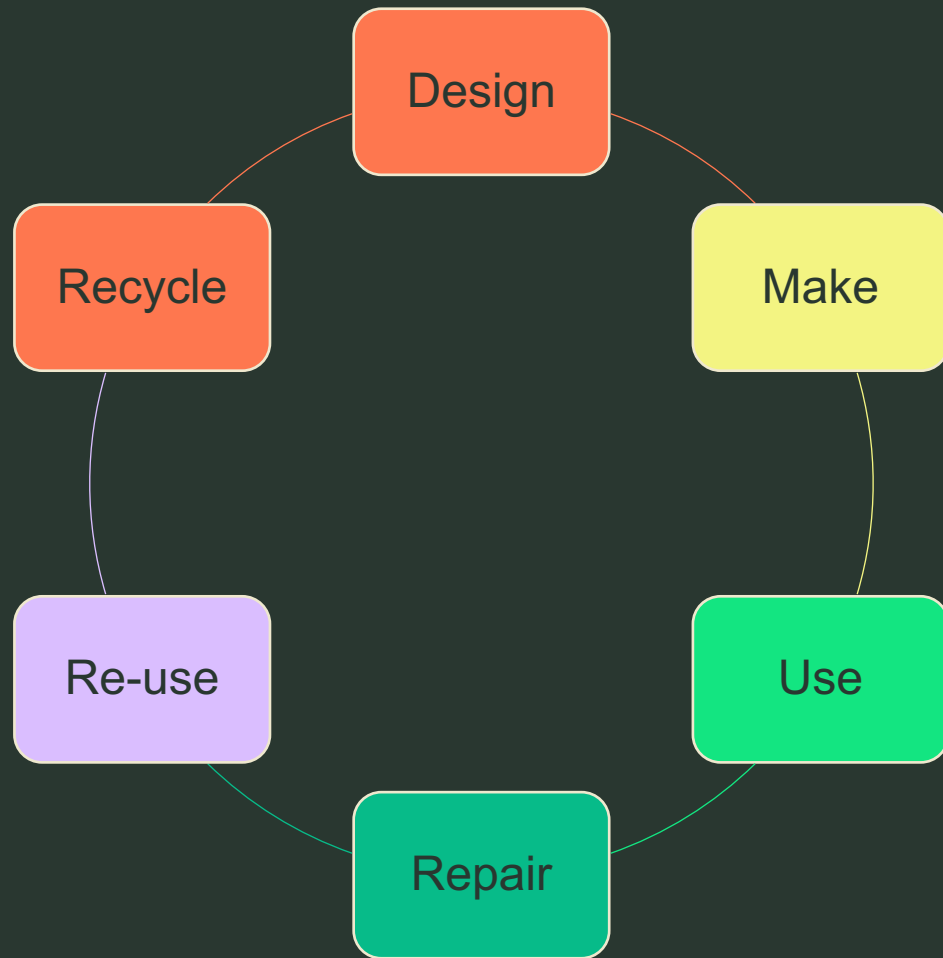
Availability

Process

Spacecraft are highly integrated & robotic servicing is difficult...



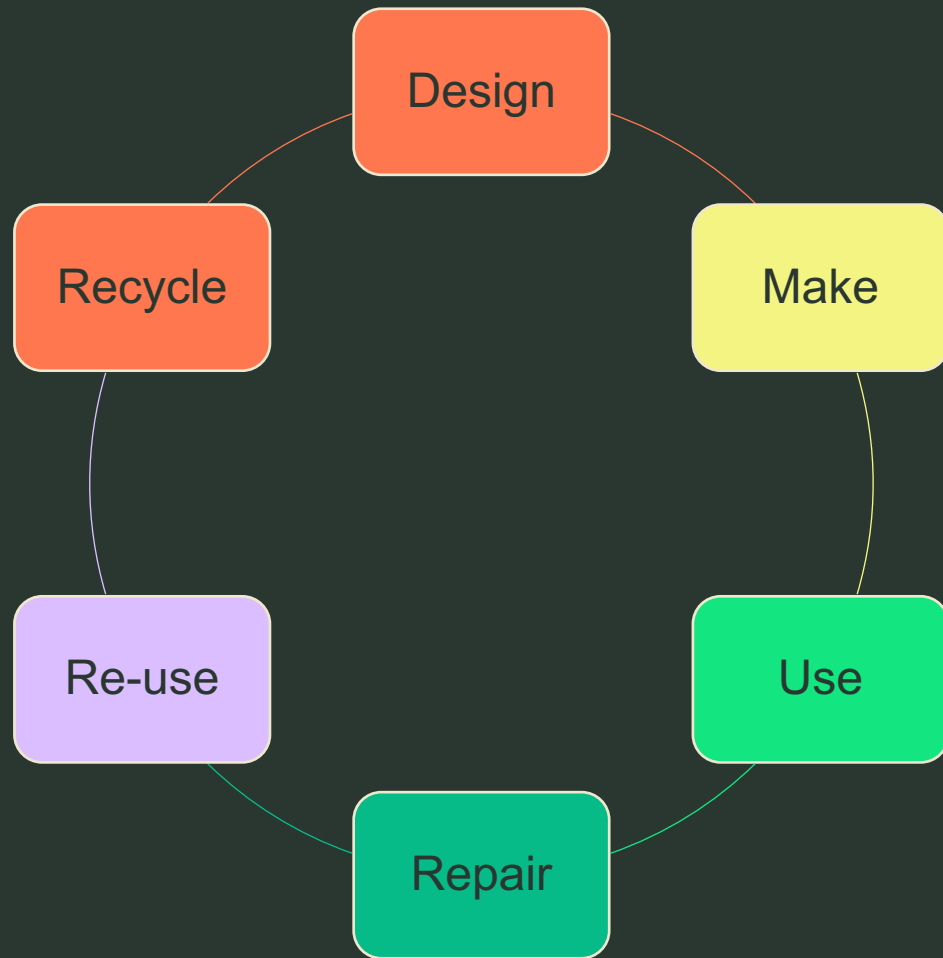
The importance of design



Spacecraft on the drawing board today must begin to consider the possibility that robotic servicing may become routine within their design lifetimes.

If new spacecraft are launched that can be serviced, this would create a strong market pull – speeding up the transition to a circular on orbit economy.


The importance of design



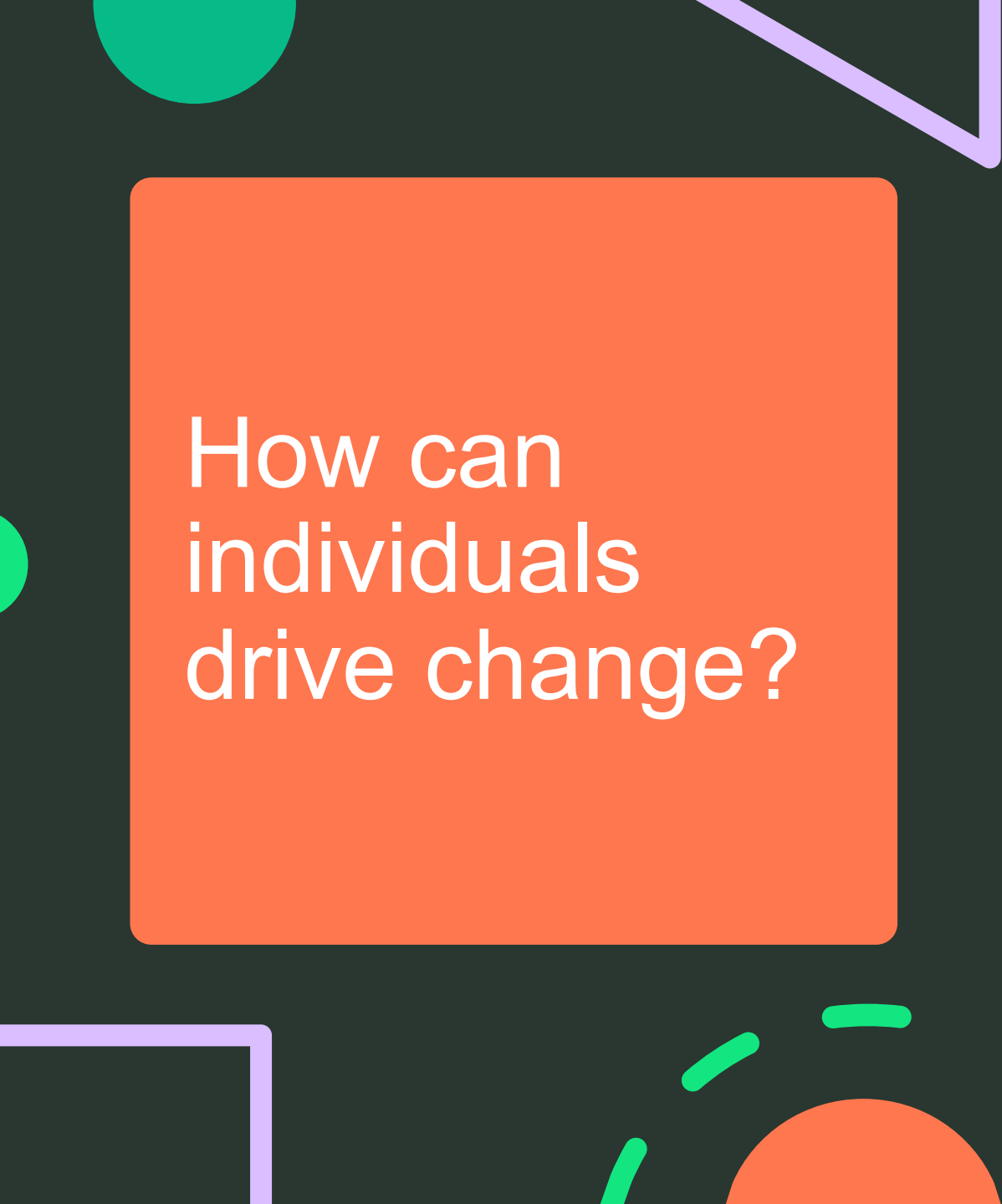
“Design for X” methods need to be developed and implemented to allow robotic servicing

For Example

- Access Panels
- Non-permanent fixings (e.g glue)
- Maintenance processes
- Part identification & handling
- Material choices
- Standardisation...



How can
individuals
drive change?

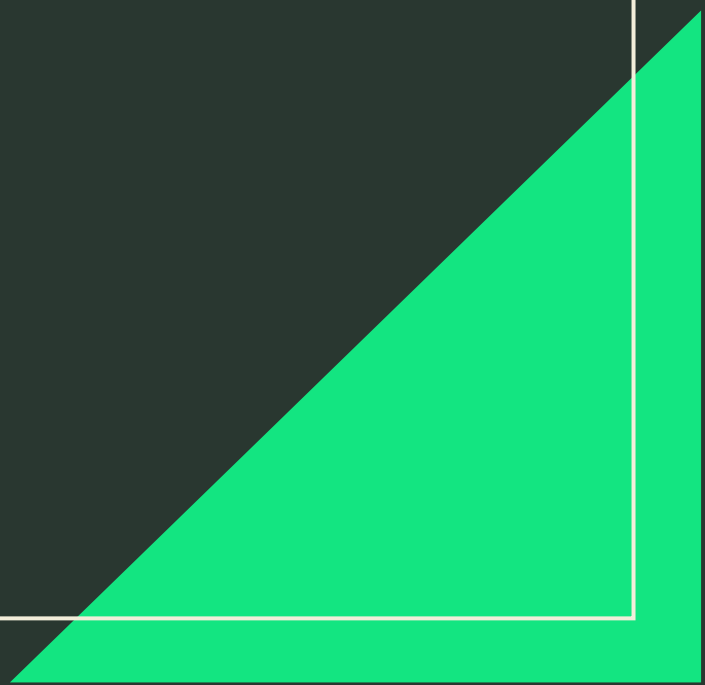


How can
individuals
drive change?

One rule: Ask questions!

Mission

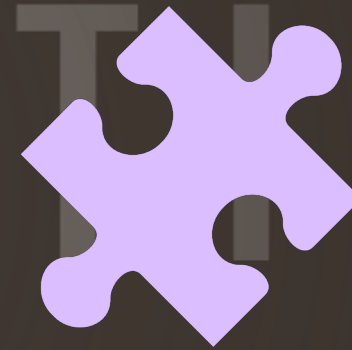
Enable a circular on-orbit economy, by design.



What we do



Thought Leadership & Expert
Services



De-Risking Critical Technology
Enablers

Our First year

Major Customer Projects



ESSI

Earth ∞ Space
Sustainability
Initiative



**UK SPACE
AGENCY**



**Innovate
UK**

Other Customers & supporters



Get
involved

