

# Introduction

## Stop designing for yesterday!

Headlines remind us daily that the planet is in trouble through the rising effects of climate change, pollution, and diminishing resources. The UK government has declared a climate emergency. David Attenborough is predicting the collapse of civilisation unless we act. Even HSBC, hard known for its environmental protection, is warning that the resources that sustain life are running out.

It's time to stop designing as if it were yesterday, when we didn't know this was happening. Put simply, if what you are creating has a bigger impact than what exists already, you are part of the problem.

This as a vital design challenge that should be grabbed like any other - with gusto, and the commitment to do our best.

These tools are for those who don't know where to start. It's a long journey to the [circular economy](#) and [transition design](#). Many organisations aren't ready for those trends. But that doesn't mean we can't do anything.

These tools help teams come together and answer the questions 'What is our impact?' and 'How might we reduce it?'

## How to use these canvases

These canvases are for any designer, product team or even a whole organisation that wants to reduce carbon emissions, pollution and resource use.

They are Open Source - feel free to share and amend them. Feedback on how to use them is very welcome as is the use of #sdfy on social media to help spread the word.

You can of course fill in data on the canvas itself, but for collaborative exercises you may want to use a whiteboard or sticky-notes. Try to use reusable or recyclable materials where you can e.g. refillable Sharpies (yes they exist). Try printing at A0 size but make sure you ask for thick paper to make them durable and reusable.

Feedback: [sdfy@mail.com](mailto:sdfy@mail.com)

Note that this address is '@mail.com' *not* Gmail

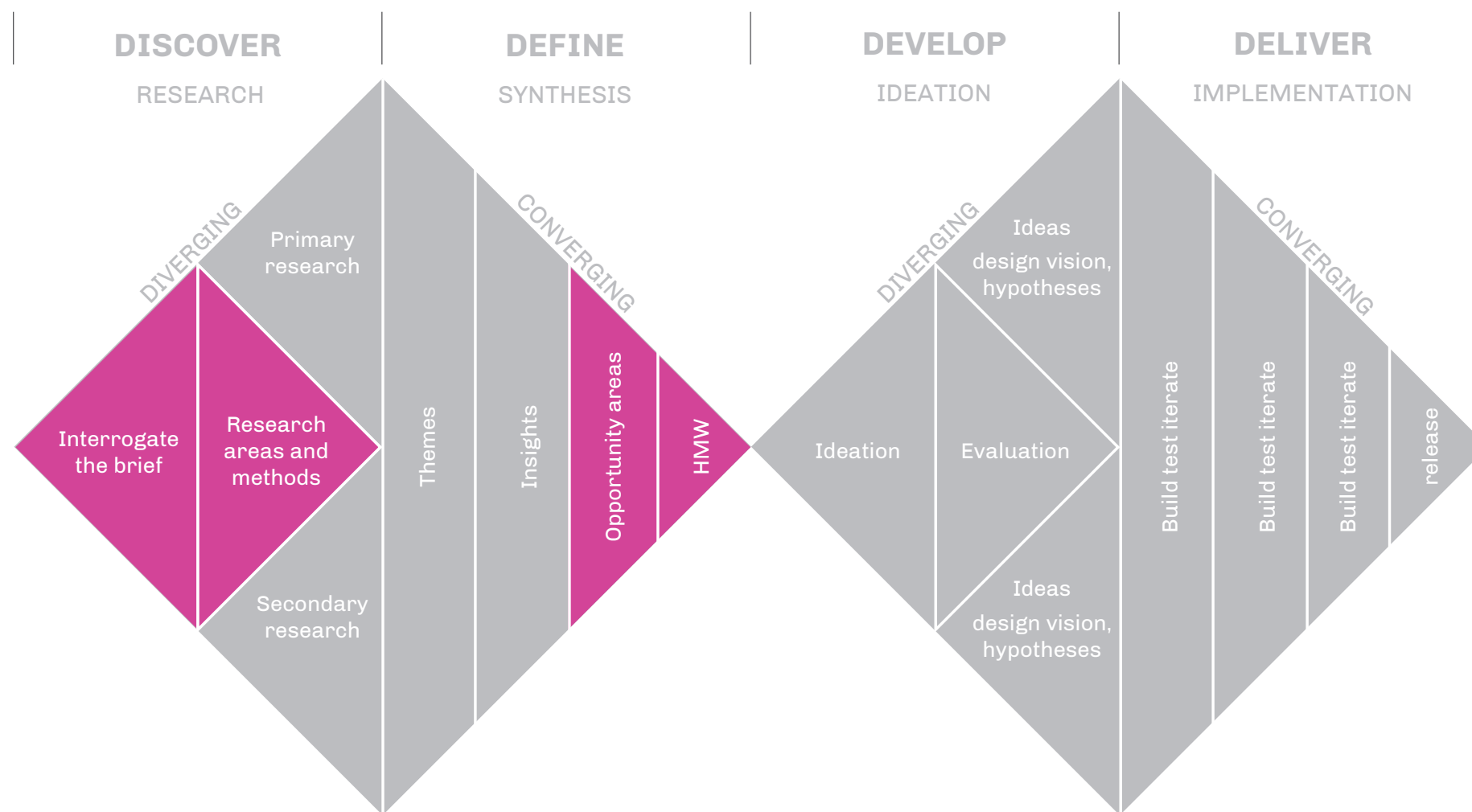
#sdfy

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# 1

## Bring sustainability into the brief

Most organisations have made public commitments to reduce their environmental impact. Often these commitments are absent from the brief and even from the mindset of stakeholders. This canvas will help you address the gap. Designers challenge and enrich briefs all this time - this just another way to do that.



### WHEN TO USE THE CANVAS

- At kickoff
- Interrogating the brief
- Planning research - what do we need to know to use the canvas?
- Opportunity area identification
- 'How might we' questions

### WHO SHOULD BE PRESENT?

- Cross disciplinary design/dev team
- Employees of the organisation sympathetic to the purpose
- Employees from different parts of the organisation who understand it's various systems, processes, assets, and culture.

### Public Statements

Research what the organisation has publicly said or committed to. Dive into annual reports, websites, press releases and news stories. We need to find ways to deliver on those commitments while also reaching initial project goals. Make client look great in a new way.

### Reframing

Initiatives that reduce environmental impact may have other benefits such as lower cost. This is useful when, for whatever reason, sustainability is a low priority. Keep track of sustainability opportunities or savings anyway for when they wake up.

### Competition

Organisations are terrified of falling behind. Perhaps you can find a way for them to catch up to the competition, or take a step ahead. Consider adjacent industries for ideas. If an initiative can count as 'innovation' even better.

### Regulation

Are there existing regulations the business is struggling to comply with, or are there new ones coming down the track? Is this an opportunity to get ahead of new laws? What about export markets?

### Macro issues

It's notoriously hard for people in large organisations to step back and see the bigger picture and we can help. There may be broader issues at play that the organisation has yet to recognise. Back it up with research; present evidence.

### Customers

Are customers are concerned about something but the organisation isn't acting on it? What are they saying? What are they expecting? How are they behaving? Is there are new way for the organisation to respond? Is there a new need?

1


Bring sustainability into the brief

How and where might we consider the environmental impact of this product or service?

	WHAT'S HAPPENING? e.g. trends, events, issues, statements, current state, disruption	WHAT ARE THE OPPORTUNITIES? e.g. show market leadership, make a measurable impact, create market differentiation, save money, deliver on other stated commitments, create	REWRITE THE BRIEF/PITCH IT How would you rewrite the brief based on this, or pitch it to stakeholders? How might you prove this new direction or addition should be included?
<b>PUBLIC STATEMENTS</b>  e.g. annual report, public commitments, debates?  Have any goals or targets been announced that we can help deliver on?			
<b>REFRAMING</b>  Can we reframe to get buy-in? e.g. Save money, drive innovation, make sustainability convenient, simplify, scale impact, increase loyalty, good PR etc			
<b>COMPETITORS</b>  What are competitors doing and saying?  What are the parallels in other industries?  How could this business be first or gain the lead?			
<b>REGULATION</b>  Which laws affect this product/service? Internationally? Nationally? Locally? Is there anything new coming? Can we get ahead of it?			
<b>MACRO ISSUES</b>  Which wider issues are being discussed at a national and global level that could be relevant?  What problems have been identified? What are the			
<b>CUSTOMERS</b>  What do customers think? What are their concerns? How are they talking about it?  What are they are looking for, wanting or expecting?			

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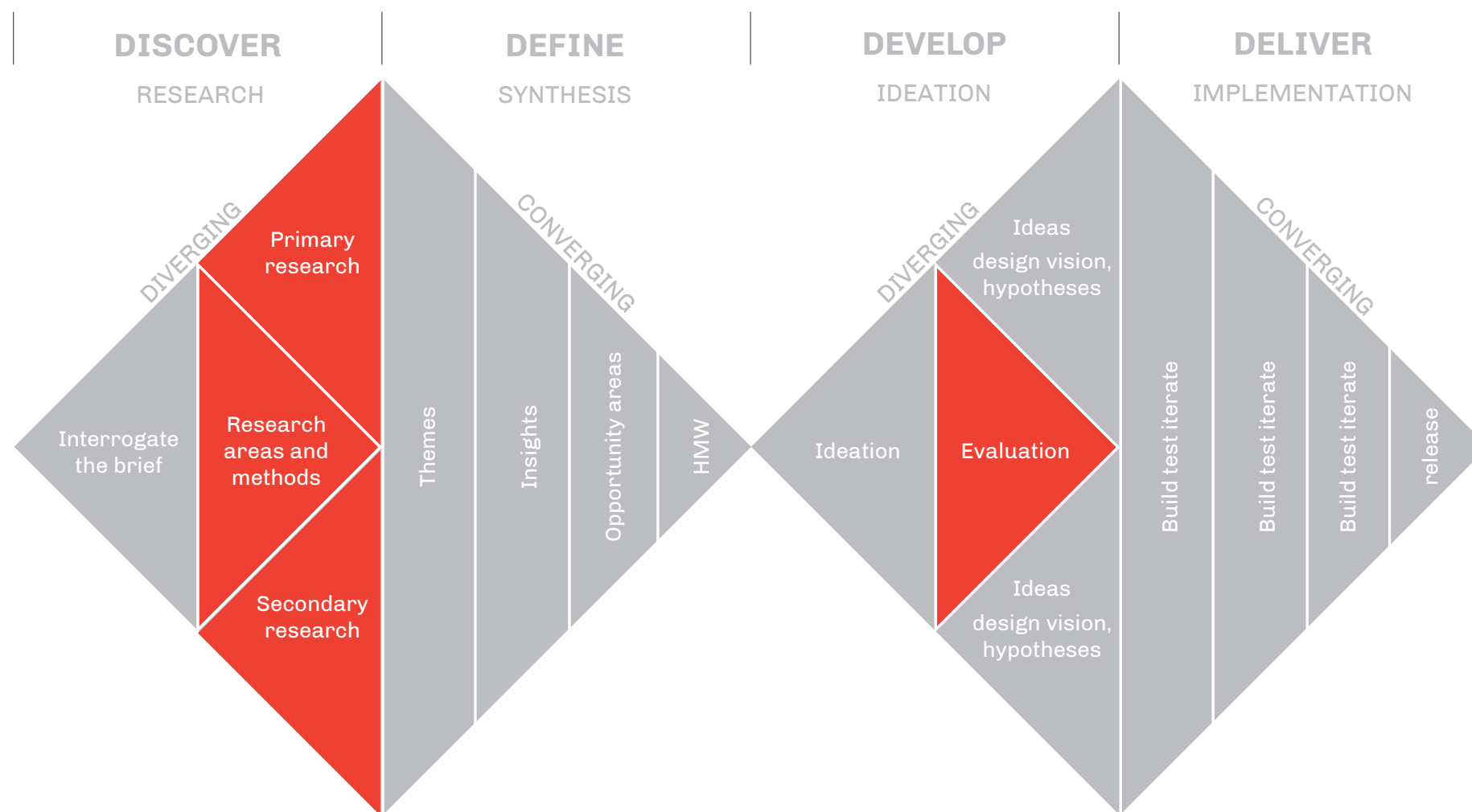
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# 2

## Environmental cost canvas

It's hard to come up with ideas to reduce your impact if you don't know what it has been, or will be. This tool is to help you assess where your product, service or organisation is using resources and creating pollution so that you can then take action. Document the inputs and the outputs. You'll soon be able to spot opportunities for change within your sphere of influence. You might be able to simply change a supplier, or pressure one to offer sustainable options.



### WHEN IS IT USEFUL?

- At kickoff when lots of stakeholders from the business can add their knowledge
- When planning and conducting research
- When evaluating ideas

### WHO SHOULD BE PRESENT?

- Researchers, collaborative teams
- Employees from different parts of the organisation who understand it's various systems, processes, assets, and culture.

### Consider partners and suppliers

It's not just our own products and services that matter. What's the impact of the suppliers and partners we are using? Can we choose some with lower impact, therefore lowering our own?

### Inputs and outputs

For this canvas by 'inputs' we mean what is going into creation of the product or service and what the impact is of the products and service we use to do so. This may include the impact of third parties. 'Outputs' refers to the impact of customers engaging with and using your product or service. Are we changing habits, for example? The canvas includes some areas of focus, shown below.

### Materials

Digital products and services are created and used in the physical world. They also offer physical products for sale. Can we reduce quantities, make different choices?

### Energy

How much energy is used in production of the inputs? How much in the outputs? Where does that energy come from?

### Transport

What are the transport inputs? What's moving where? How are things moving around? Are we increasing or decreasing the use of certain types of transport?

### Pollution

Are we increasing carbon emissions or other types of pollution by creating or modifying this product or service?

### Waste

Where is waste created, can we avoid it, how is it disposed of, what can we influence?

2


Environmental cost canvas

What's the impact created by 1) ourselves 2) suppliers 3) users/customers

	WHAT DO WE/PARTNERS/ SUPPLIERS USE (INPUTS)	WHAT'S THE IMPACT?	WHAT DO WE/PARTNERS/ SUPPLIERS GENERATE (OUTPUTS)	WHAT'S THE IMPACT?
<div><div>MATERIALS</div><div>What are the things we use made of? What are the things we help our customers used made of? How much of it is there?</div></div>				
<div><div>ENERGY</div><div>What energy is or was used? Remember to include embodied energy (what was used to bring something into existence e.g. from mining</div></div>				
<div><div>TRANSPORT</div><div>What transport was used up until now and what will be used as a result of our product or service?</div></div>				
<div><div>POLLUTION</div><div>Id your product or service cfrea5ing any fossil fuel emissions, gases, waste that is not being disposed of correctly etc?</div></div>				
<div><div>WASTE</div><div>Is any waste created? Do you give users anything they don't need? Is anything being used unnecessarily? Is there something remaining at the that needs to be disposed of? Where does it go? Can it be reduced?</div></div>				

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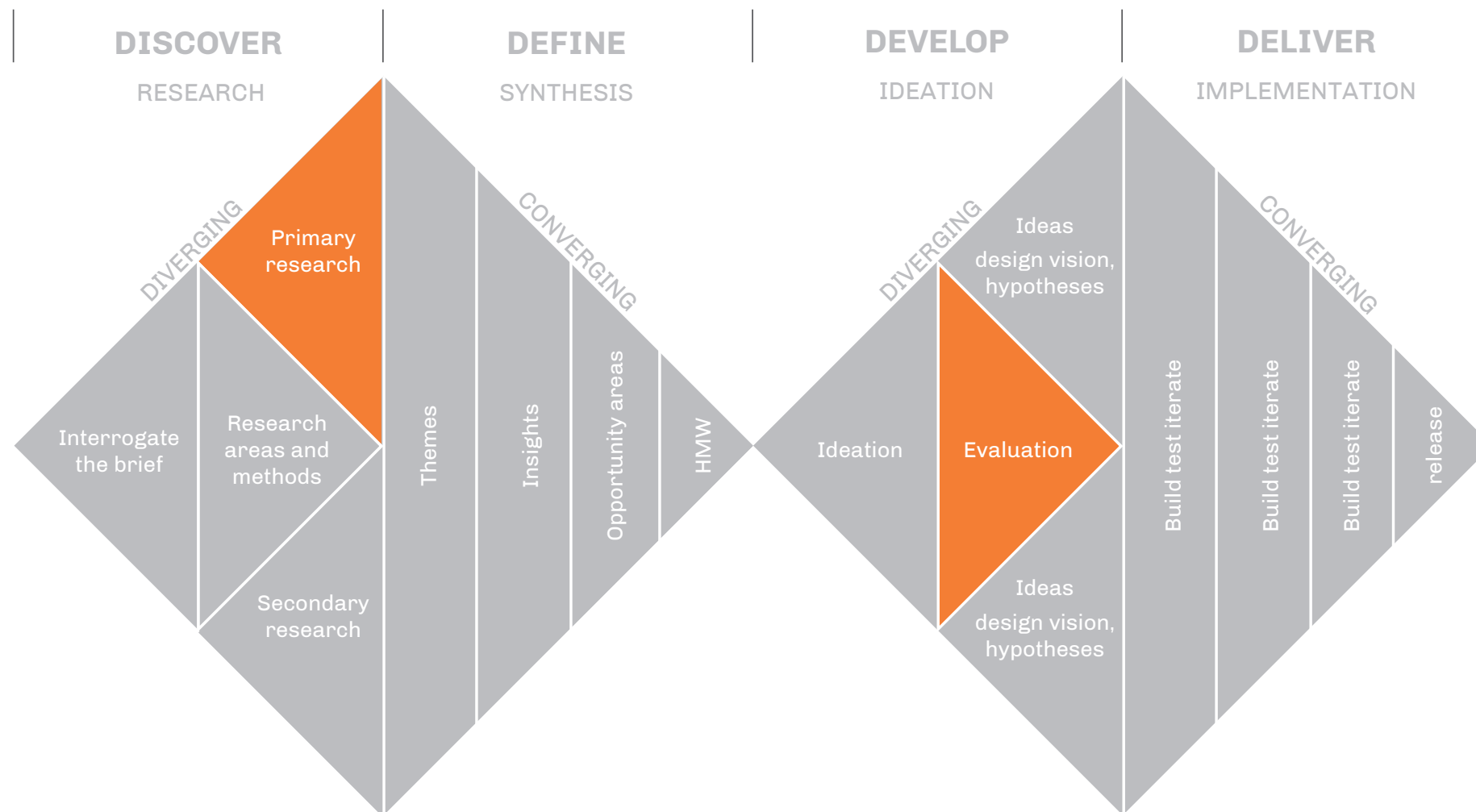
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# 3

## Lifecycle impact assessment

It's partly short term thinking that has got us into this mess. Let's stop that. This is a customer centred, holistic view that looks at every stage from creation to disposal. We need to ensure that while solving one problem we are not creating another. You can use this for brand new products and services or existing ones. The data you've gathered on canvas 2 will be useful here. We should also consider the habits and behaviours created, and their impact.



### WHEN IS IT USEFUL?

- At kickoff when lots of stakeholders from the business can add their knowledge
- When planning and conducting research
- When evaluating ideas
- When moving into implementation

### WHO SHOULD BE PRESENT??

- Researchers, cross-disciplinary teams
- Employees from different parts of the organisation who understand it's various systems, processes, assets, and culture
- Decision makers and influencers

### Customer action

In this case customer refers to any user. What are they doing? What decisions are they making? Why? Are we encouraging or enabling an unsustainable choice or behaviour?

### Inputs

Where in the lifecycle are inputs creating the biggest impact? Can they be changed to something lower impact?

### Outputs

What gets used or created as a result of people using the product or service? Examples include waste such as packaging, emissions,

### Habits/Behaviours

Is our service creating or modifying any behaviours or habits? What is the knock on effect? If they switch to this service away from another is the environmental impact better or worse? Are our default options making it easy for people to make poor decisions?

### Opportunities

Once we've seen the impact we are creating, what are the opportunities to reduce it? This is the exciting and rewarding part. Every change you make here, from the tiny to the significant is going to make a difference compared to if you hadn't run this exercise. Remember at scale even small changes can make a big difference.

3


Lifecycle impact assessment

Where are the opportunities to reduce impact throughout the product or service lifecycle?

	CREATION/BUILD/ MANUFACTURE	AWARENESS OF PRODUCT/SERVICE	ENGAGEMENT	FIRST USE	ONGOING USE	SERVICE/ REPAIR	END OF USE
<div>CUSTOMER ACTION</div> <div>What are customers doing? How are they engaging or interacting? You could also add their emotional state.</div>							
<div>INPUTS</div> <div>What are using to do this? Who are we partnering with and what are they using? What are we using that is created by or supplied by</div>							
<div>OUTPUTS</div> <div>What are the results of people using our product or service? What gets used or created?</div>							
<div>HABITS &amp; BEHAVIOURS</div> <div>Are we creating or changing any habits or behaviours? What is the impact?</div>							
<div>OPPORTUNITIES</div> <div>Are there any opportunities based on the above for us to make a positive change?</div>							

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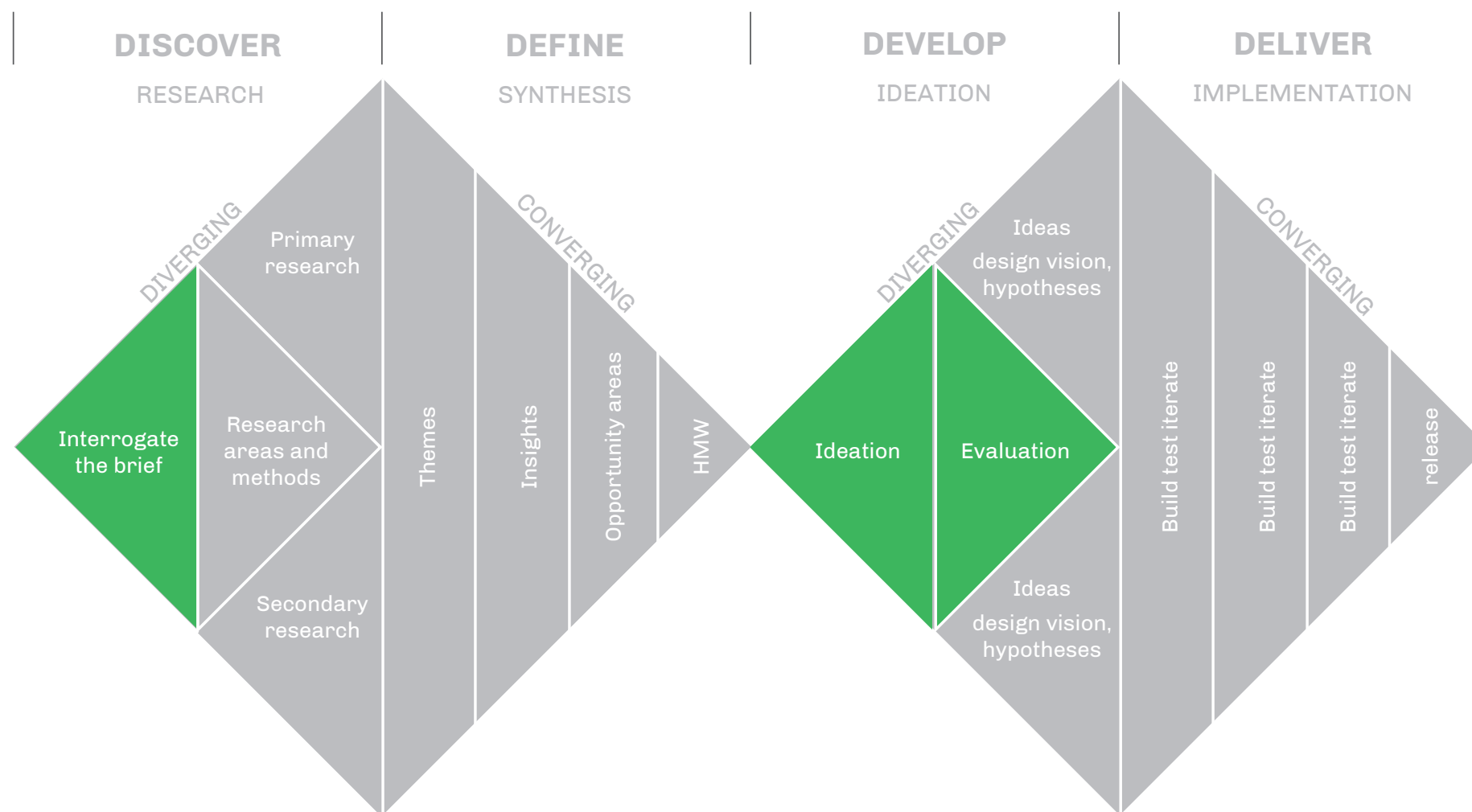




# 4

## Green 3x2: How Might We...

This is an ideation tool for use when you have begun to understand the impacts your product, service or organisation. You may want to use it to fill in the 'Opportunities' row on canvas 3. You're looking for quick wins in the short term as well as more strategic change in the longer term. Bring these things together and you'll have a plan to reduce your impact that can start today - but doesn't stop tomorrow.



### Choose your focus, create ripples

This canvas should be fairly self-explanatory. Feel free to choose more or different areas of focus in the left hand column.

It's important to focus on things in your sphere of influence, unless you are prepared to turn up the pressure and lobby regulators for change.

Even requesting that your suppliers offer more sustainable options will trigger change. If the answer is no - go to the top and ask why. If you change supplier on this basis make sure you tell them. This is how we can create ripples of influence and speed up change.

You may need to run this exercise several times with a different focus, depending on the complexity of your products and operations

Try it on your office and operations, too. Every single step you take will create a ripple as well as make you a more attractive partner for others to engage with as the crisis accelerates - which it will.

#### WHEN IS IT USEFUL?

- At kickoff when lots of stakeholders from the business can add their knowledge
- During ideation
- When evaluating ideas

#### WHO SHOULD BE PRESENT?

- Cross-disciplinary team
- Stakeholders who understand the current state
- Stakeholders with visibility of longer term strategy
- Decision makers and influencers



4

Green 3 x 2: How might we...

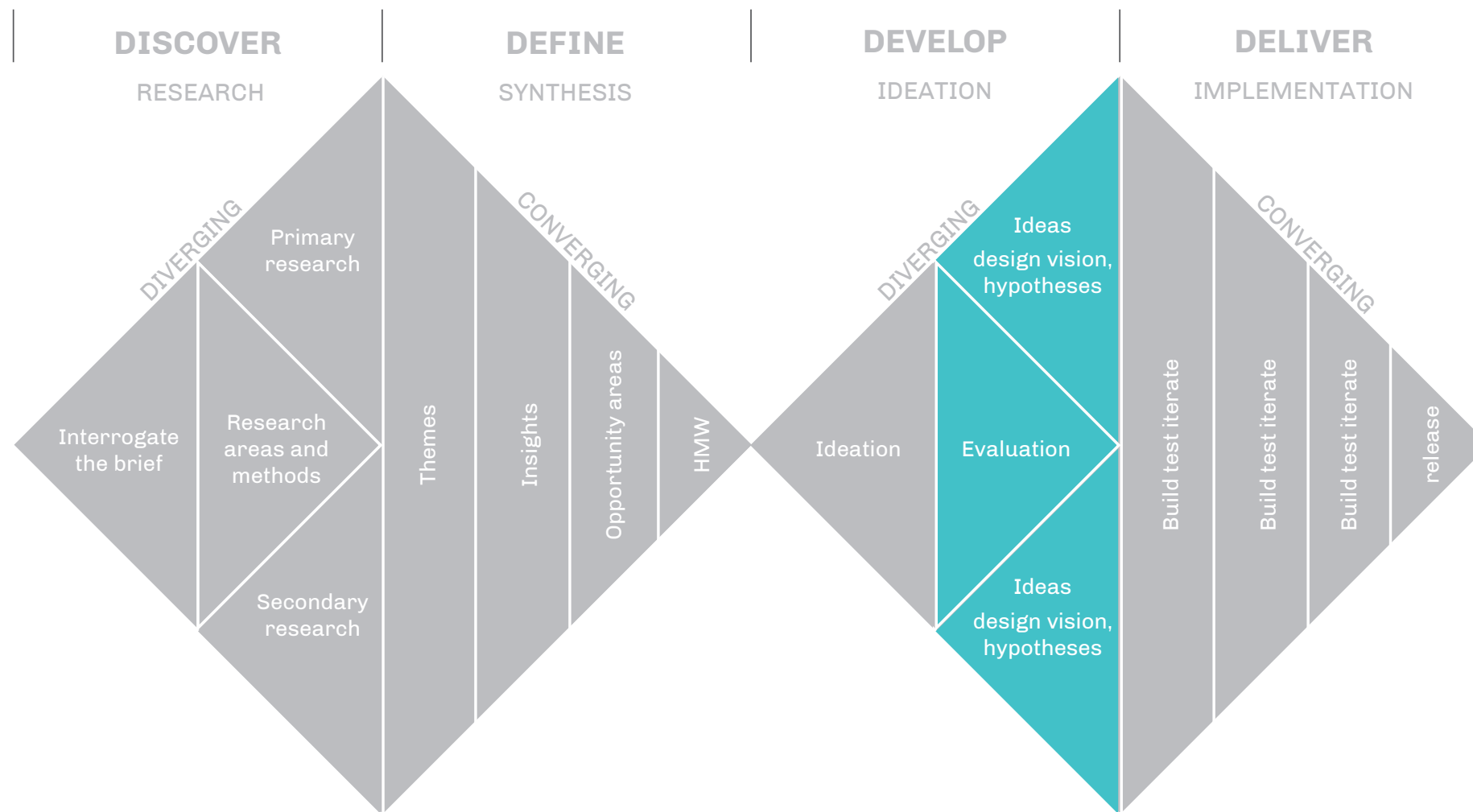
	These are your quick wins. Specify a time frame.	<b>IN THE FUTURE?</b> Make ideas achievable by your company or team. This is about
<b>USE FEWER RESOURCES?</b>  How can we reduce the resource use we are responsible for, both directly and indirectly? (Land, water, energy, minerals, forests, animals, birds, fish, marine organisms) Can we change the inputs? Can we make some changes to our product/service to reduce this?	e.g. change a supplier to a more sustainable one; use motion sensors to turn lights on; reduce data transfer and therefore energy use	
<b>CREATE BETTER HABITS?</b>  Can we offer better options, incentivise better behaviour, show the impact, create a lower overall impact?	e.g. charge people for non-recyclable items, make less sustainable options more difficult or expensive to choose and more sustainable ones more convenient	
<b>CREATE LESS POLLUTION?</b>  Pollution* consists of contaminants in the natural environment that create an adverse change. Can we reduce exhaust emissions, channel waste to somewhere it can be reused or somewhere there is a better outcome? Can we change the inputs? Can we make some changes to our service to reduce this? *Air pollution, light pollution, littering, plastic pollution, soil contamination, radioactive contamination, thermal or water pollution.	e.g. reduce vehicle movements, prioritise suppliers with less packaging.	



# 5

## Green Lean Canvas

Think how many new businesses the Lean Canvas may have birthed. And then think how many may not have considered the environmental impact because it wasn't on the canvas. This is just like the Lean Canvas but with environmental impact given equal prominence to factors such as revenue and metrics. This canvas also includes social impact for a broader definition of sustainability.



### WHEN IS IT USEFUL?

- Whenever you would use a Lean Canvas
- When evaluating different concepts
- When pitching your startup ideas

### WHO SHOULD BE PRESENT?

- Cross-disciplinary team
- Product owner
- Stakeholders

### Lean Canvas

Lean Canvas is an adaptation by Ash Maurya of the Business Model Canvas by Alexander Osterwalder.

Order the book here:

<https://www.strategyzer.com/books/business-model-generation>

There's quite a good summary here:

[https://medium.com/@steve\\_mullen/an-introduction-to-lean-canvas-5c17c469d3e0](https://medium.com/@steve_mullen/an-introduction-to-lean-canvas-5c17c469d3e0)

### Green Lean Canvas

Now, do all of that, but never forget the environment that sustains us all. Economics generally ignores the cost to the environment and that nothing is possible without a healthy ecosystem around us. So - time to move on from that absurdity. It's not endless, and it's more fragile than you think. Minimise your impact!


5

Green Lean Canvas

<div>PROBLEM</div> <div>Top 1-3 problems</div> <div>EXISTING ALTERNATIVES</div> <div>List how these problems are solved today</div>	<div>SOLUTIONS</div> <div>Outline a potential solution for each</div>	<div>UNIQUE VALUE PROPOSITION</div> <div>Why you are different? Why should people should pay attention?</div> <div>HIGH LEVEL CONCEPT</div> <div>The X of Y (e.g. YouTube is Flickr for videos, it's like Uber for house cleaners etc)</div>	<div>MARKET ADVANTAGE</div> <div>What makes it hard for others to copy? What's your 'wow' factor?</div>	<div>CUSTOMER SEGMENTS</div> <div>Who are your customers - the people who will pay for your product?</div> <div>IDEAL</div> <div>Describe your ideal customers</div>
	<div>KEY METRICS</div> <div>How will you measure success?</div>		<div>CHANNELS</div> <div>How do you get to your customers?</div>	
<div>COST STRUCTURE</div> <div>Your fixed and variable costs</div>		<div>ENVIRONMENTAL &amp; SOCIAL IMPACT</div> <div>What is the environmental impact? What resources are used, what waste or pollution is created through its creation and use? Is there a social cost?</div>		<div>REVENUE STREAMS</div> <div>List your sources of revenue</div>

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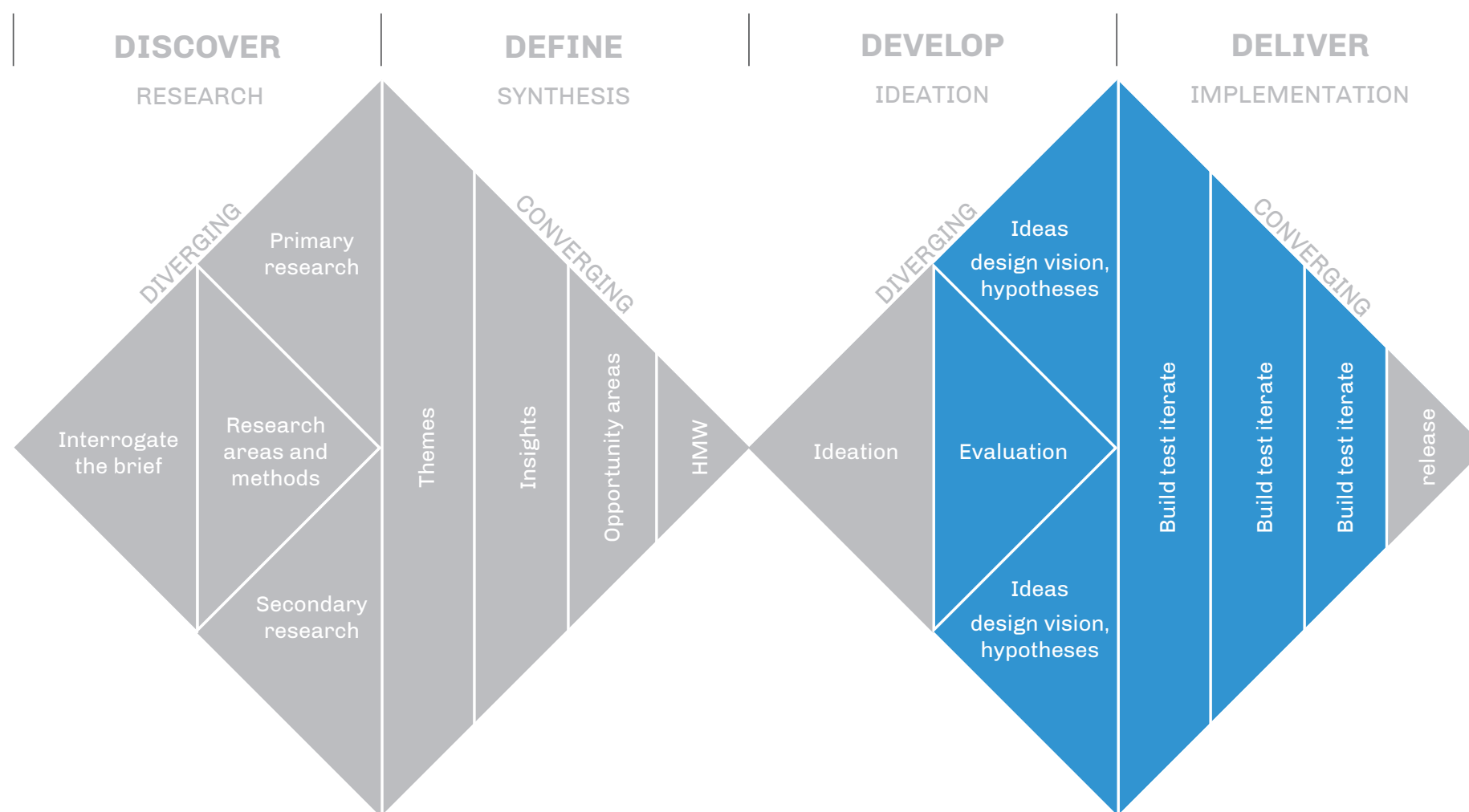
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# 6

## Minimising data transfer

Digital products and services require data transfer to operate. But how much? And is it all necessary? Data transfer has multiple impacts, from energy use in the data centre, to infrastructure capacity, to on-device energy consumption. Remember video, text and images are all data. Is it all really necessary?



### WHEN IS IT USEFUL?

- When evaluating ideas
- When creating design vision and design principles
- During testing of prototypes
- When implementing the design

### WHO SHOULD BE PRESENT?

- Designers
- Tech architects
- Developers
- Stakeholders

### About the matrix

This matrix is designed to help you identify and prioritise ways you can reduce the impact of the design of a digital product or service. This impact is invisible to us in the same way that when we use a tap we forget about the environment, water table, reservoirs, treatment plants, extensive infrastructure and sheer human effort it takes to bring those drops of water to your home. But the impact is there whether we think about it or not.

### Less data, more inclusive

If you reduce the data you not only make things easier and cheaper for mobile users who are playing for their own data, you also make the entire service more inclusive. Not every country in the world has class leading data infrastructure.

### Low value, high data use

This is your low hanging fruit. The low value should make it easier to reduce. Do you have videos on auto-play by default? Do users actually watch them? If not, shorten them, remove them, limit their size.

### High value, high data use

This may take a little more though but if it's integral to your product or service it's more vital that you reduce this data.

### Ideation area

The canvas includes a space on the right to capture ideas for data reduction.

6

Minimise data transfer

MAP YOUR DATA USE

LOWER BUSINESS  
AND/OR USER VALUE

low  
hanging

LOW DATA VOLUME

HIGH DATA VOLUME

HIGHER BUSINESS  
AND/OR USER VALUE

HOW MIGHT WE MINIMISE IT? IS THERE A LESS DATA-HEAVY  
WAY TO DELIVER THE SAME VALUE?

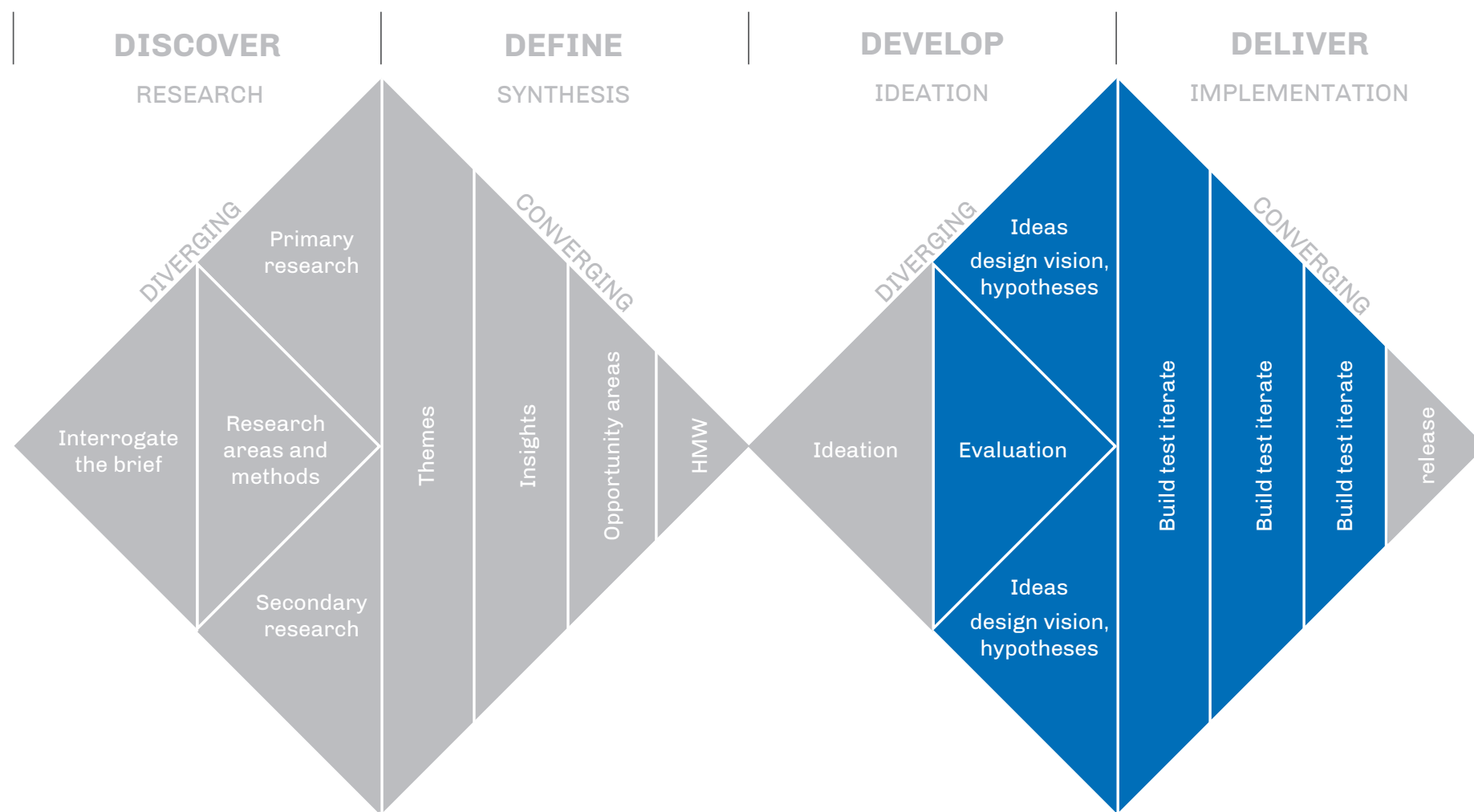
Is it really needed? Can text do this instead? Consider vector graphics versus pixel images, elements native to the device versus server. Does it have to be a video? Use better compression?

consider design options  
for each item on the left

# 7

## Prioritise opportunities

Hopefully by now you have lots of ideas, but what do you start with? Let's find out.



### WHEN IS IT USEFUL?

- When evaluating ideas
- When creating design vision
- During testing of prototypes
- Design and build of iterations

### WHO SHOULD BE PRESENT?

- Designers
- Developers
- Technical architects
- Product owner

### Make a difference

There are all sorts of ways to define this, but it's what we're here to do. The top half of the canvas should be your focus.

Remember a small change at scale, over time will have impact. A big change to something users only access at signup, for instance, may have a smaller effect. It's hard to say.

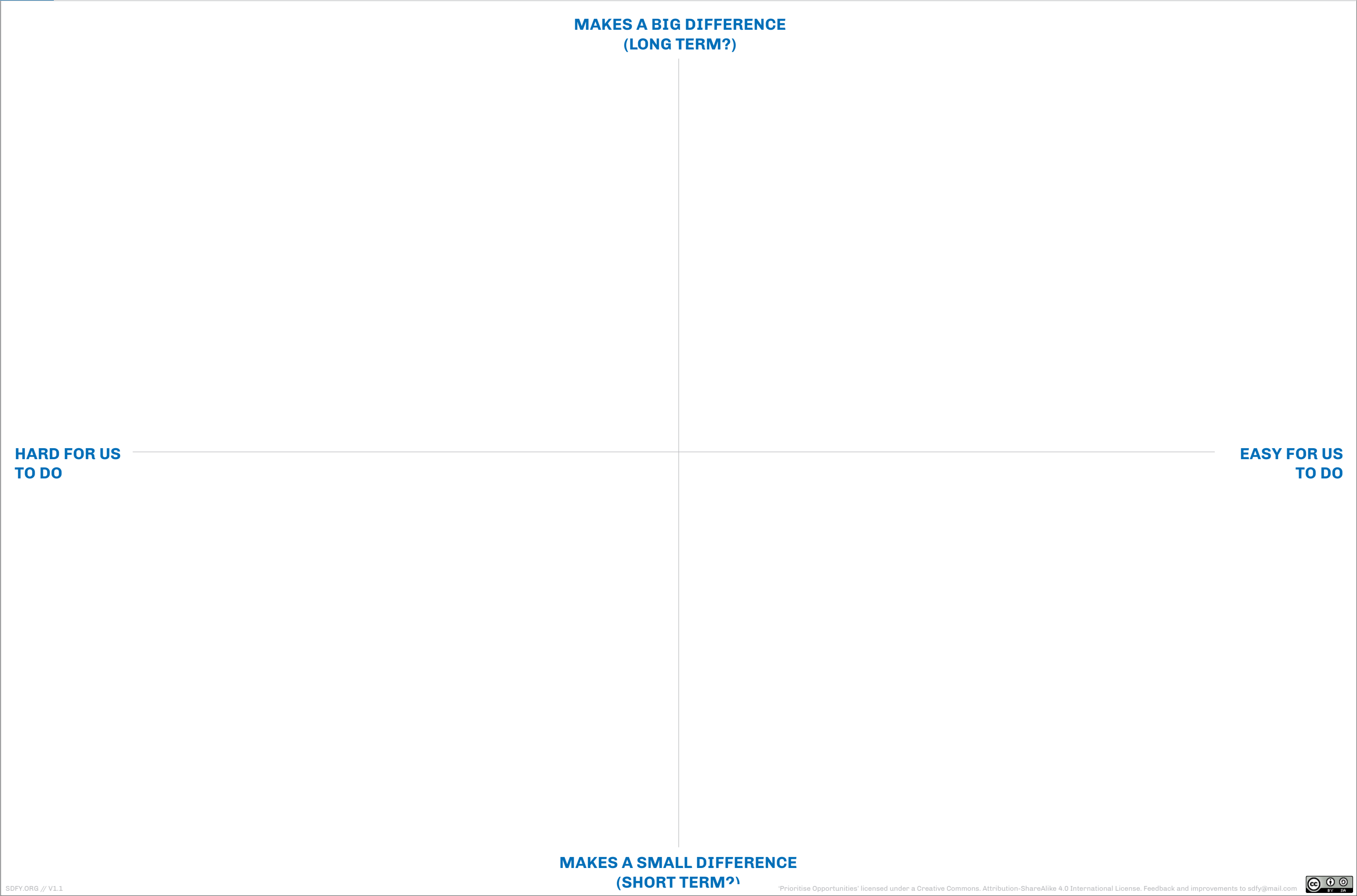
### Collaborate

This is a great example of where tech and design collaboration can work together in a truly impactful and balanced way. Be prepared to redesign, and be prepared to re-engineer.

7

Prioritise opportunities

Where should we focus first?

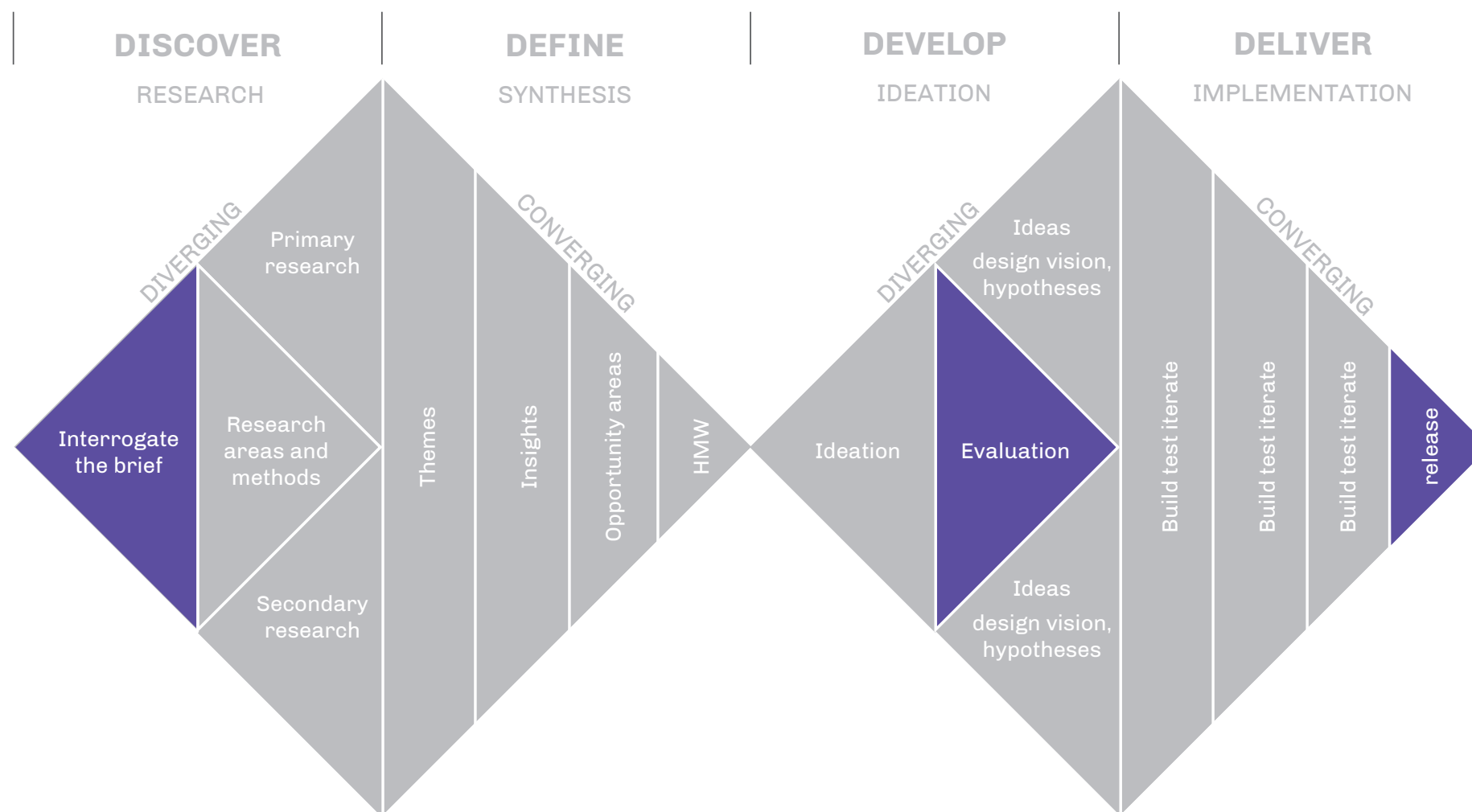




# 8

## Three green horizons

Like canvas 4, this takes a longer term view and is for teams to look at the immediate future but also at longer term macro trends and strategise accordingly. This tool will assist a more expansive discussion and help formulate a plan for change. It combines internal and external sustainability challenges and offers space for sustainability initiatives and vision.



### WHEN IS IT USEFUL?

- At kickoff with key stakeholders
- When evaluating ideas
- When releasing and considering next steps

### WHO SHOULD BE PRESENT?

- Cross-disciplinary team
- Key stakeholders

### About the three horizons

This framework appears to have originated with McKinsey. It ignores the environment in any formal sense: "The three horizons framework offers a way to concurrently manage both current and future opportunities for growth." Well, we think perpetual drought might affect future opportunities for growth. So we have adapted it to focus on sustainability initiatives.

Before you start, decide what your three horizons are. Make it something that works for your organisation. Generally, horizon 1 is from now until 6-12 months ahead; horizon 3 is 5-10 years, and horizon 2 is the interim period.

### Sustainability challenges

List out the challenges you see in the short, medium and long term. Short term is likely to be dominated by the immediate challenges - no suppliers have a sustainable option, there are barriers in your organisation. For the longer term, include trends, statistics, market realities, government policy and regulation, global factors.

### Sustainability initiatives

What is your organisation doing, and what is it planning? What's coming your way? What are regulators planning? Are there any sustainability initiatives in the pipeline you can take advantage of? When are they due? What are your suppliers up to? What other third party factors might there be? Infrastructure that allows more sustainable choices?

8

Three Green Horizons

What's happening in the wider context? Consider existing initiatives, strategy, challenges and opportunities. Can we plan for a better outcome?

SUSTAINABILITY CHALLENGES

List and then map to diagram below

SUSTAINABILITY INITIATIVES

List and then map to diagram below. How might we reach our goals?

←more certain

less certain→

INTERNAL

EXTERNAL

H1

near term

\_\_\_\_\_to\_\_\_\_\_

H2

medium term

\_\_\_\_\_to\_\_\_\_\_

H3

further ahead

\_\_\_\_\_to\_\_\_\_\_

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