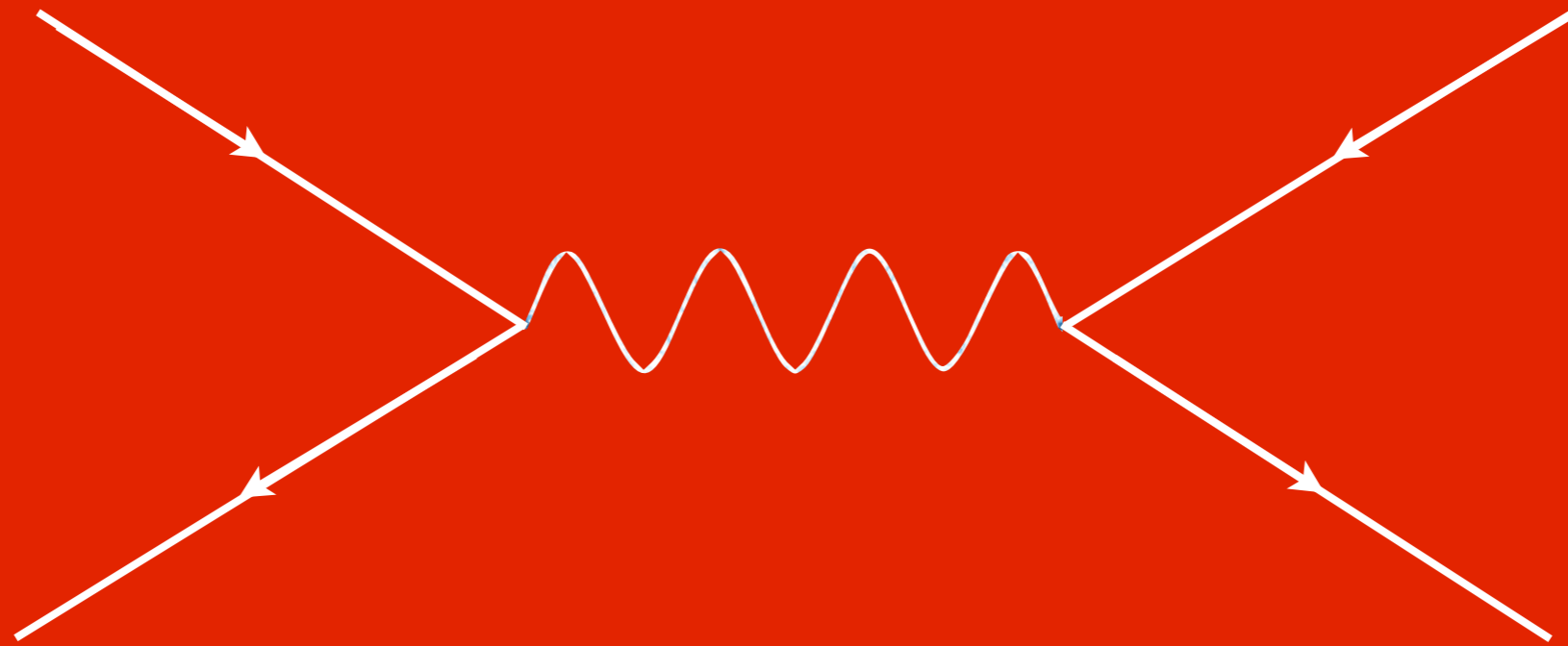# Evolutionary Design Process



The evolutionary design process consists of (1) going wide: **creating models** (ideas & plans) and (2) going narrow: **testing** them, in multiple iterations, to refine new ones.
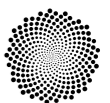
EVOLUTIONARY DESIGN CONSISTS OF A CYCLE OF
TESTING AND REFINING IDEAS TO ACHIEVE
HIGHER FIDELITY AND GREATER MARKET FIT

IDEA → TEST → REFINE → REPEAT ⋯⋯▸ FIT

THE DESIGN CYCLE

anthemis design
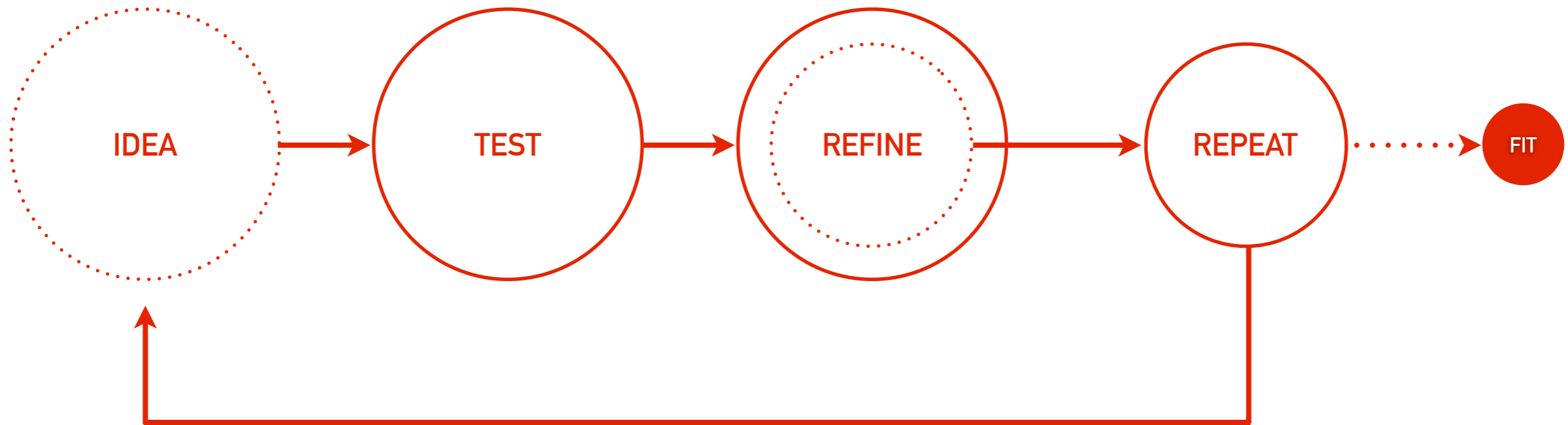
The only way we have of creating successful things without a designer is evolution. Evolution results in waste and takes a long time, every single feature of every single living thing on earth is the result of suffering over millions of years.

Design is artificial, accelerated evolution, creating new ideas and models and testing them in a controlled environment (simulation) to achieve successful ideas.
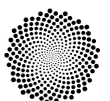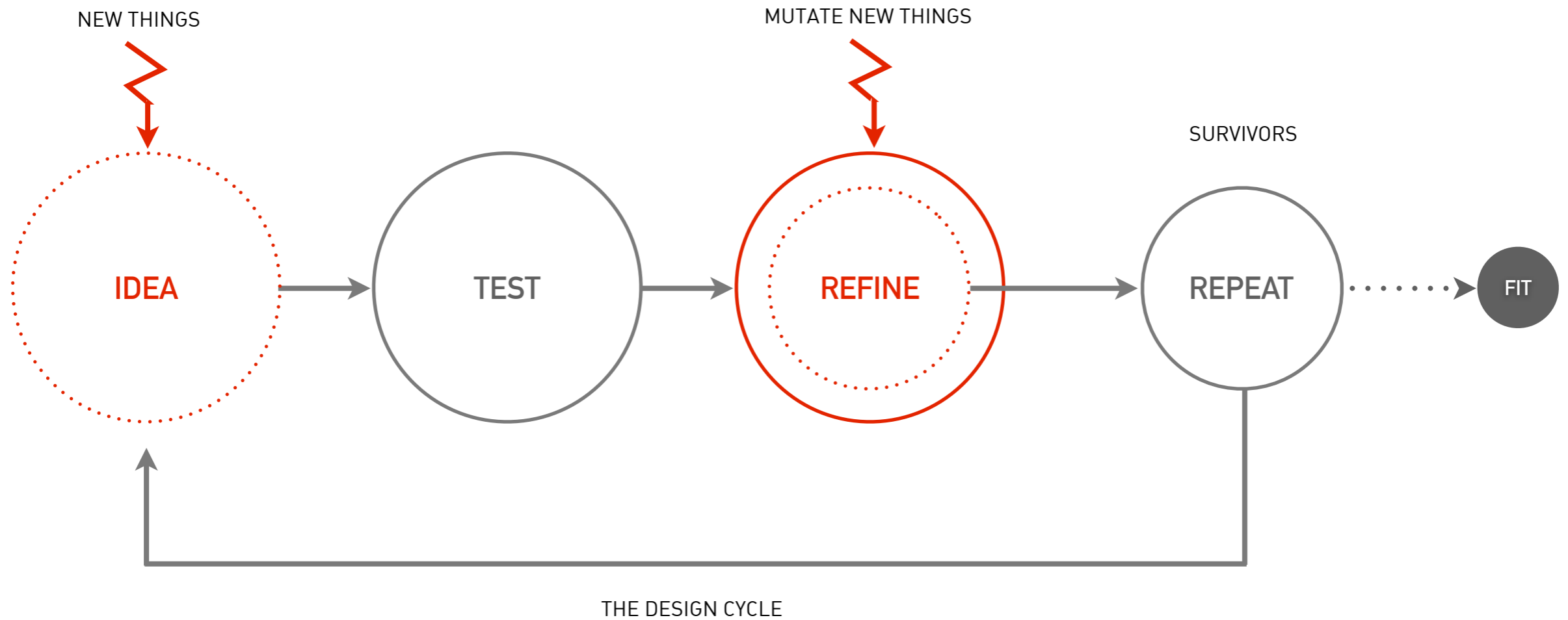
Models are simulated via thought experiments, mockups and internal or external prototypes which are tested by scientific validation/ prediction or feedback from actual use.  Feedback loops refine future models, removing inefficiency and waste in creating new things.

natural selection

Natural evolution creates accidents that are edited by selective survival in a finite environment. Design gets rid of options without real world failure through simulation and human selection - e.g. brainstorming ideas, creating mockups, prototypes and MVPs.

Mutation (design) vs selection (test) rate is the principal tuning parameter of design.

NEW THINGS

MUTATE NEW THINGS

SURVIVORS

**IDEA** → **TEST** → **REFINE** → **REPEAT** ┄┄► FIT

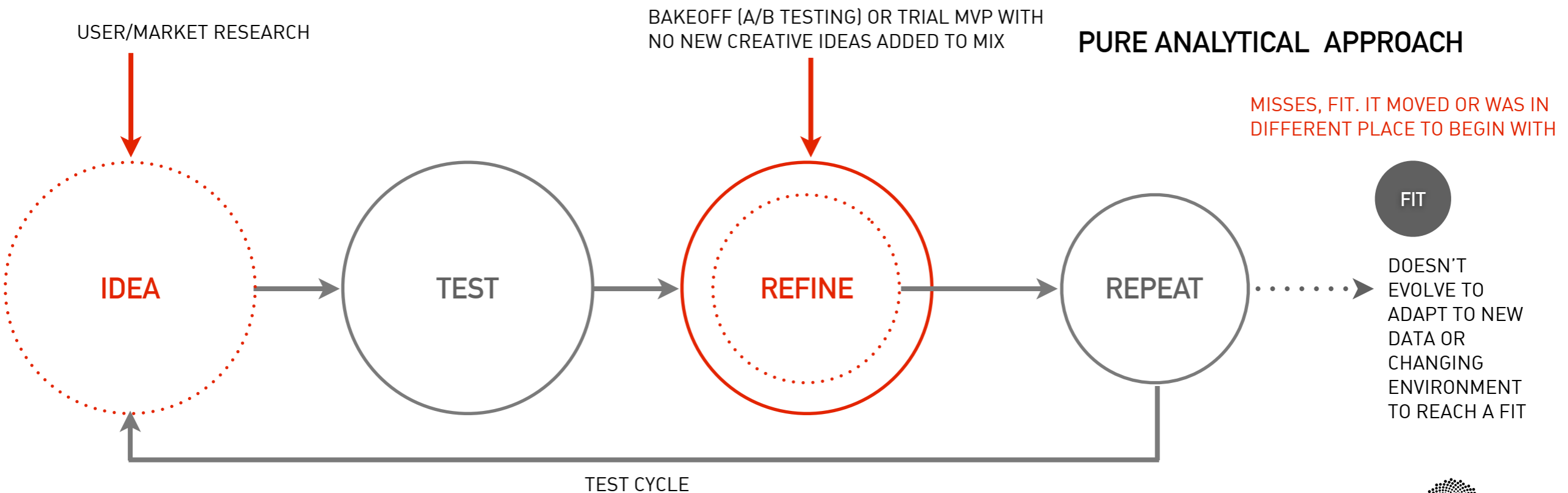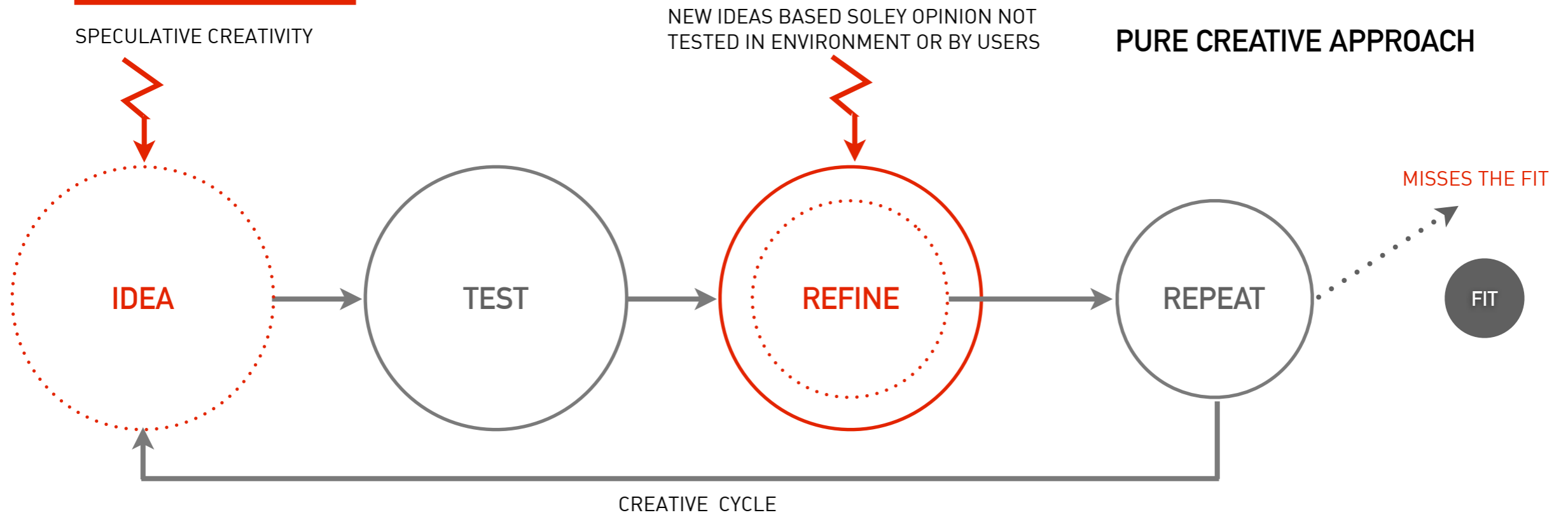THE DESIGN CYCLE

anthemis design

A purely creative approach to design fails becuase it is the equivalent of evolution with **too high a mutation rate**.

A purely market or user research approach to design fails because if is the equivalent of evolution **without any mutation**.

evolutionary design

A purely creative approach with not enough user research can mean that ideas are too far away from potential fit and will fail.
A purely research driven approach may be too reductive and therefore not introduce new ideas, and so will not adapt to where the fit will be.

SPECULATIVE CREATIVITY

NEW IDEAS BASED SOLEY OPINION NOT TESTED IN ENVIRONMENT OR BY USERS

**PURE CREATIVE APPROACH**

IDEA → TEST → REFINE → REPEAT ⋯⋯> MISSES THE FIT

FIT

CREATIVE CYCLE

USER/MARKET RESEARCH

BAKEOFF (A/B TESTING) OR TRIAL MVP WITH NO NEW CREATIVE IDEAS ADDED TO MIX

**PURE ANALYTICAL APPROACH**

MISSES, FIT. IT MOVED OR WAS IN DIFFERENT PLACE TO BEGIN WITH

IDEA → TEST → REFINE → REPEAT ⋯⋯>

FIT

DOESN'T EVOLVE TO ADAPT TO NEW DATA OR CHANGING ENVIRONMENT TO REACH A FIT

TEST CYCLE

anthemis design

Evolutionary design achieves the correct **balance between research and creativity, in the design and testing phases** however the relationship between both of these needs to be specifically defined for both phases...

**(1) Designing:** the balance between research and design is implied in the term 'informed creativity' (i.e. rather than just creativity). Creativity is what creates the equivalent of mutations in a evolutionary environment to test new things. However as intelligent beings we can make informed judgements about which new ideas 'mutations' are likely to succeed, so designing based upon ideas validated by research  is quicker and results in less short term failure, than a purely Darwinian environment.

Evolutionary design still needs some mutations (new ideas), however. This requires two things (a) a work environment that encourages serendipity by allowing new things to be created by accident and (b) for designers to be pick and arrange the best ones based on hunches that can be later tested. The real creativity is in intuitive pattern recognition, selecting and prioritization without a priori, research based justification.

**(1) Designing**: summary.

Good designers are good at noticing and arranging things among mess. It's impossible to deliberately create genuinely new things from scratch so you need an environment with just the right amount of freedom and mess to create lucky accidents.

**(2) Testing: adding informed new ideas** - in order that the process of testing and refining ideas leads somewhere it is important to allow the refinement of designs to include new creative ideas rather than optimising the original. This solves issues arrising from where the premise for the original concept was based on incorrect data or assumptions or where the market for the product has changed.

Just as the original design phase needs to be based on informed ideas from a blend of research and creativity, new research need to be added to the mix at the testing and refining phase, too. The difference between this process and those followed by tradional marketing led (Product Requirement Docs derived from marketing dept interaction with users) or Agile (go to users with an MVP) is that a product can be tested in house and validated/refined by designers before putting in front of users.
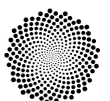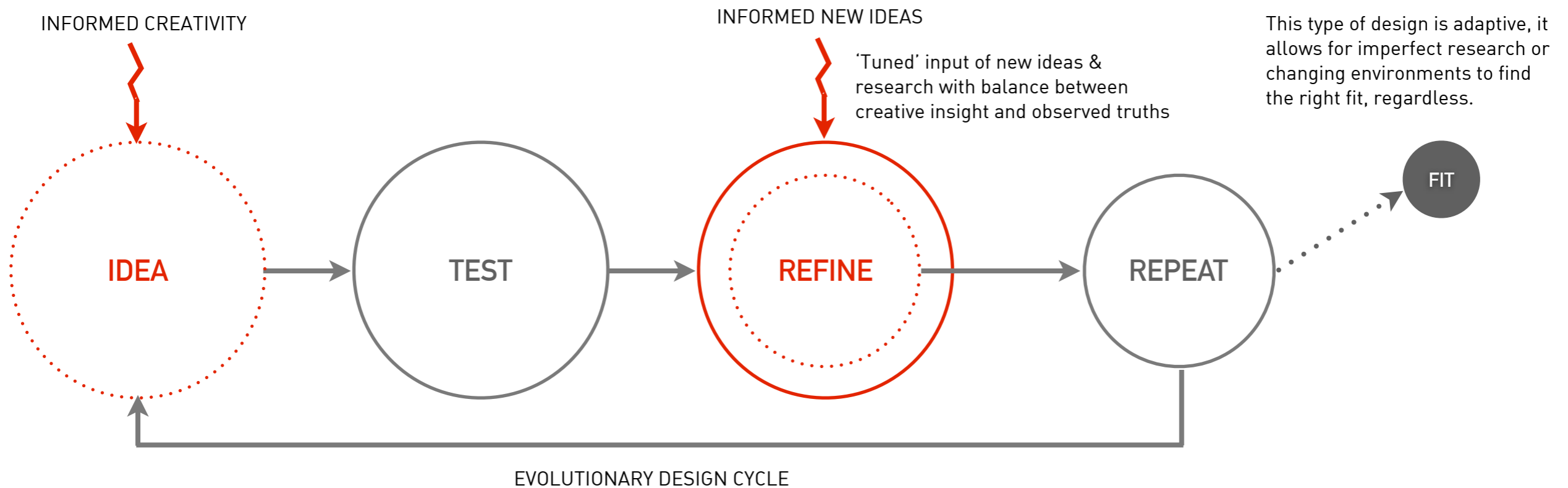
**(2) Testing:** summary

Designers must be able to test in-house (brainstorm, mockup, prototype) and be able to change and re-priortise existing specifications or features without research or end user testing based justification, but which can later be validated externally. Without this, product refinement will tend to be based on features rather than holistic properties.

Too much creativity creates too much noise in the evolutionary design cycle, too little makes it non adaptive (it doesn't evolve).
Either too little or too much noise results in failure, just as in real evolutionary environments, too much or too little mutation results in failure.

# DESIGNING TO ADAPT TO WHERE THE FIT WILL BE

INFORMED CREATIVITY

INFORMED NEW IDEAS

'Tuned' input of new ideas & research with balance between creative insight and observed truths

This type of design is adaptive, it allows for imperfect research or changing environments to find the right fit, regardless.

IDEA → TEST → REFINE → REPEAT → FIT

EVOLUTIONARY DESIGN CYCLE
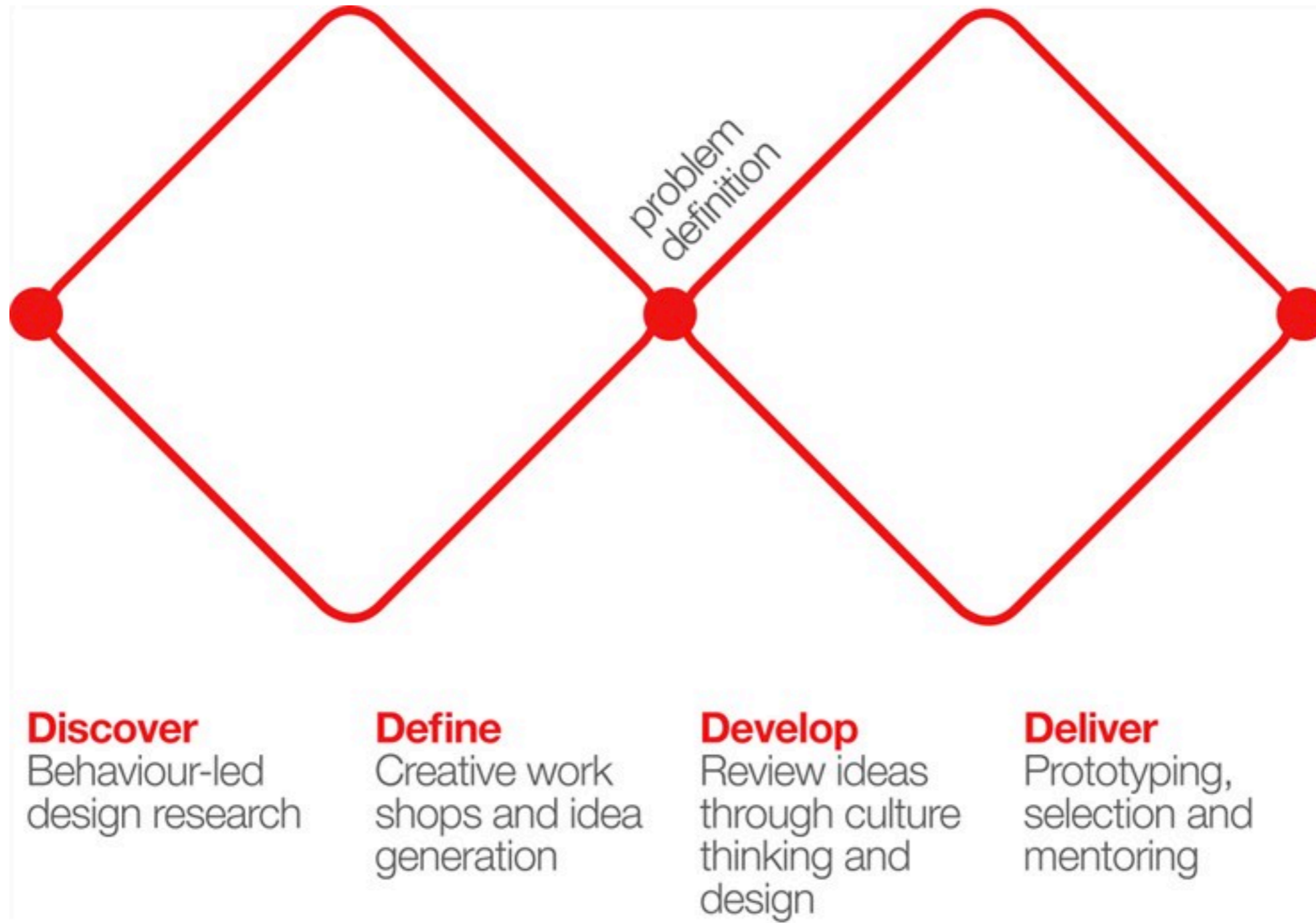
anthemis design

A Universal Design Process Module

We take the common diagrammatic
representation of a diamond to
represent 'going wide' & 'going narrow'
stages of design, from methodolgies
such as 'Double Diamond', and make it
a modular unit that can be repeated as
many times as is needed based on the
type of end product and strategy.

going wide
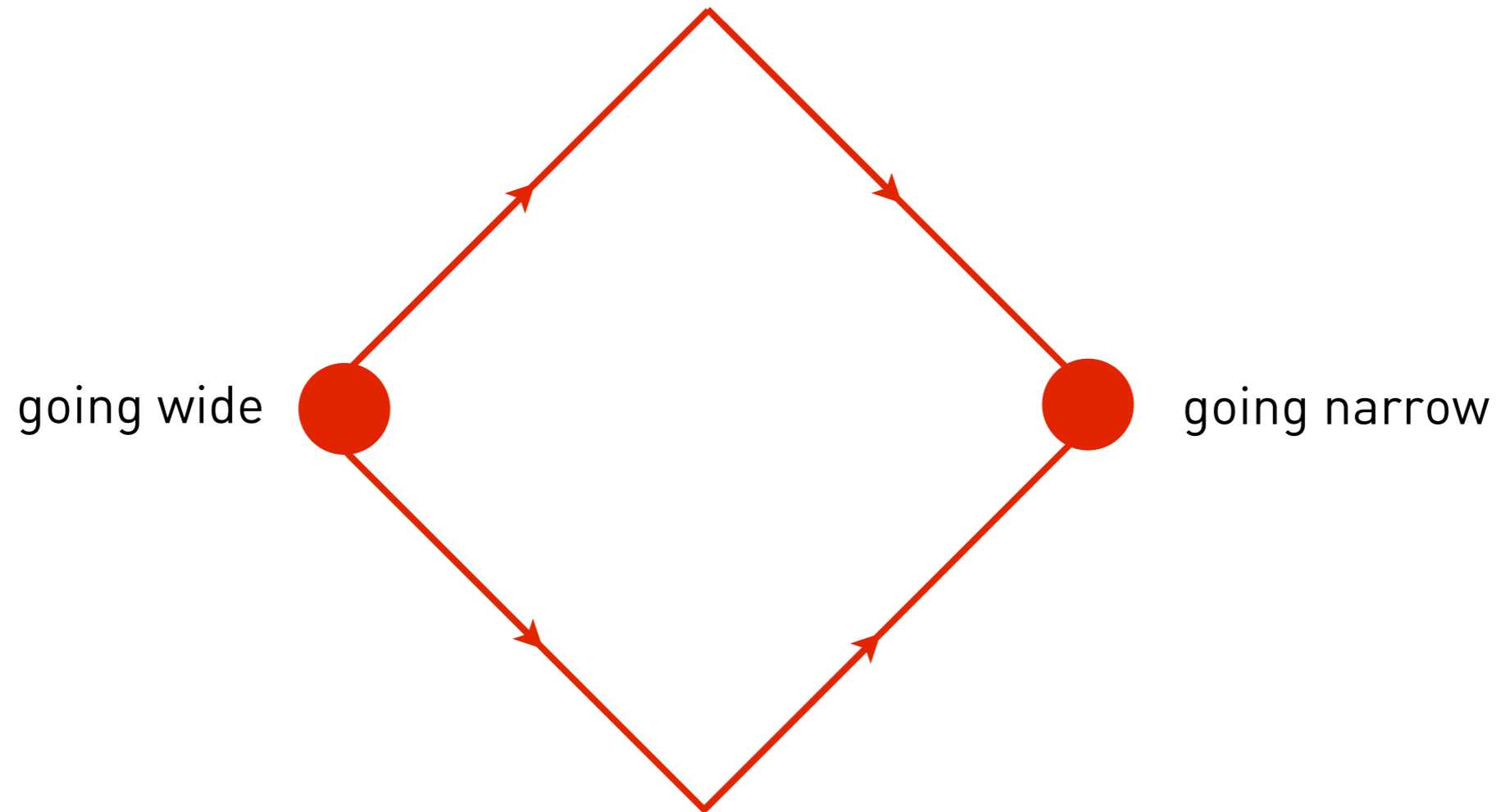
going narrow

going wide & going narrow can be
represented as a diamond shape

Design Council's
Double Diamond design process
model.



problem
definition

**Discover**
Behaviour-led
design research

**Define**
Creative work
shops and idea
generation

**Develop**
Review ideas
through culture
thinking and
design

**Deliver**
Prototyping,
selection and
mentoring

Going wide: divergent thinking to generate ideas and models.

Going wide consists of (a) finding or creating types of serendipitous environments for ideas to emerge and (b) types of ideas and models.

The number of possible 'going wide' options depends on the number of combinations of (a) and (b).

create an environment to generate happy accidents
(hypotheses) and edit and develop them through a
combination of pattern recognition and intuition
combined with reason.

# going wide, by creating serendipity and different types of models

**different ways to create serendipity.**

encourage development of ideas
based on hunch rather than proven
workability.

follow things through without second
guessing to create possibilities for
unforeseen things rather than
dismissing things out of hand.

allow testing ideas based on tools
that designers can use intuitively
themselves (so that not everything
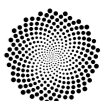has to be codified to pass to someone
else, which reduces intuition).

Create chance meetings and
conversations.

Create open format sessions without
time constraints and overdue process
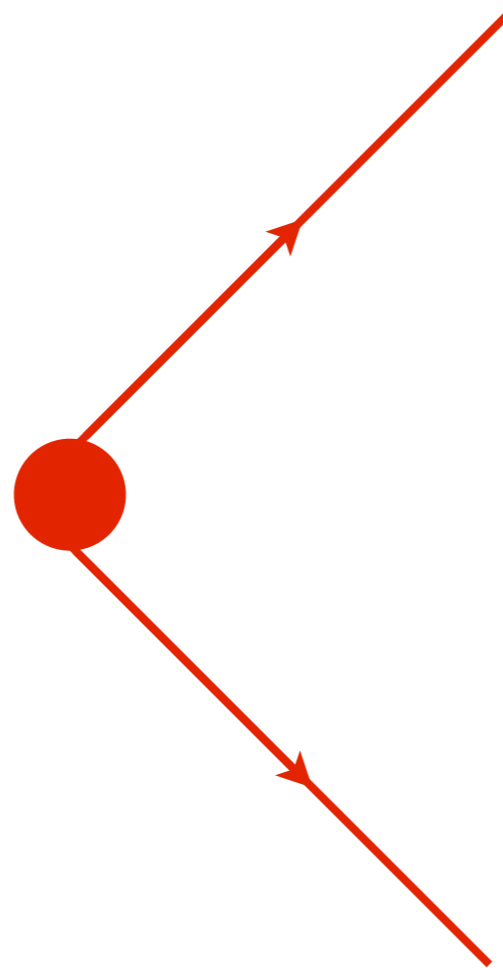
**different types of model:**

thought experiment; concept
document; blueprint; recipe;
concept model; business design
(product + business model); MVP

anthemis design

**G**oing narrow: narrowing options and predicting or filtering successful ones by testing models in a controlled environment to refine them.

Going narrow consists of (a) types of testing environment and (b) types of conclusions from results.

The number of possible 'going narrow' options depends on the number of combinations of (a) and (b).

going narrow is reductive - to narrow choices for what
works or doesn't works. This can be done by prediction or
testing, and the testing can be done by putting it in in an
external real or controlled environment or an internal
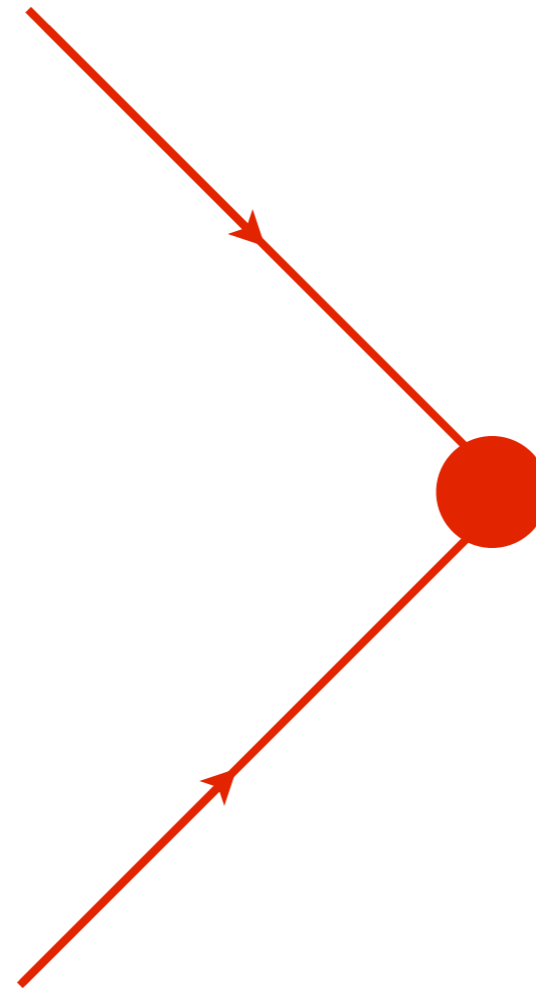controlled environment.

# going narrow, by testing and eliminating

### different ways of testing models [where model options are thought experiment, concept document, blueprint, recipe, concept model, business design (product + business model), MVP]:

model designed for internal testing

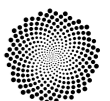model designed for external testing

### different ways to eliminate options from test results

decision: go; no go; refine or declare winner (e.g. in a/b test)

based on:

internal decision process: design opinion, team consensus opinion, provable metrics

external decision process: user consensus opinion, a/b user test, failure (natural) selection

**Universe of Multi-Diamond Process Models**: The number of individual diamond modules that can be produced depends on all the combinations of 'going wide' and 'going narrow'. In turn, the number of possible 'multi-diamond' design process models is the number of ways these modules can be combined. With only a few original types of design model and tests the number of process models becomes comprehensive.