Upstream versus Downstream interventions

Banny Banerjee
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Stanford d.school, Stanford Design Program
Director, Stanford ChangeLabs

With contributions from
Jason Bade
Johannes Zachrisson Daae
David Miller

STANFORD DESIGN PROGRAM

ChangeLabs.

Global Score Card

2030 Targets	Confidence Level
50% reductions in CO2e	LOW
45-50% more FOOD	LOW
39-45% more ENERGY	LOW
40% more FRESHWATER	LOW
3-4 orders of magnitude slowdown in EXTINCTION rates	NIL
0 in EXTREME POVERTY ($1.25/Day)	LOW

Sources: **The energy challenge,** Mike Hightower1 & Suzanne A. Pierce, ***Nature* 452**, 285-286 (20 March 2008). Word Bank 2013 Water report, Information brief on Water and Agriculture in the Green Economy. UNW-DPAC, 2011, Oct 9, 2013 World Bank announcement on Poverty Eradication Goals

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$\tau_{intervention}$

$\tau_{challenge}$

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"What kind of interventions will change the ecosystem behavior?"

In all it's messiness

OVER-ARCHING QUESTIONS AND ISSUES

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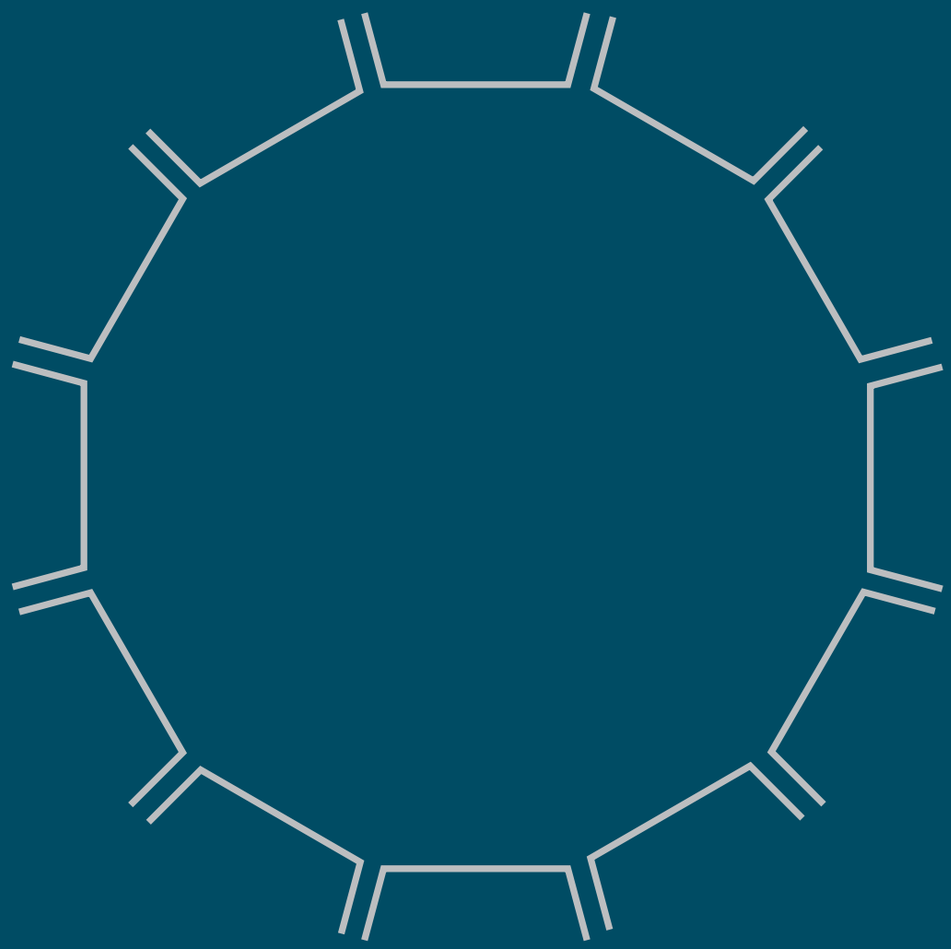
Mental models - recycling a soda can before boarding a flight



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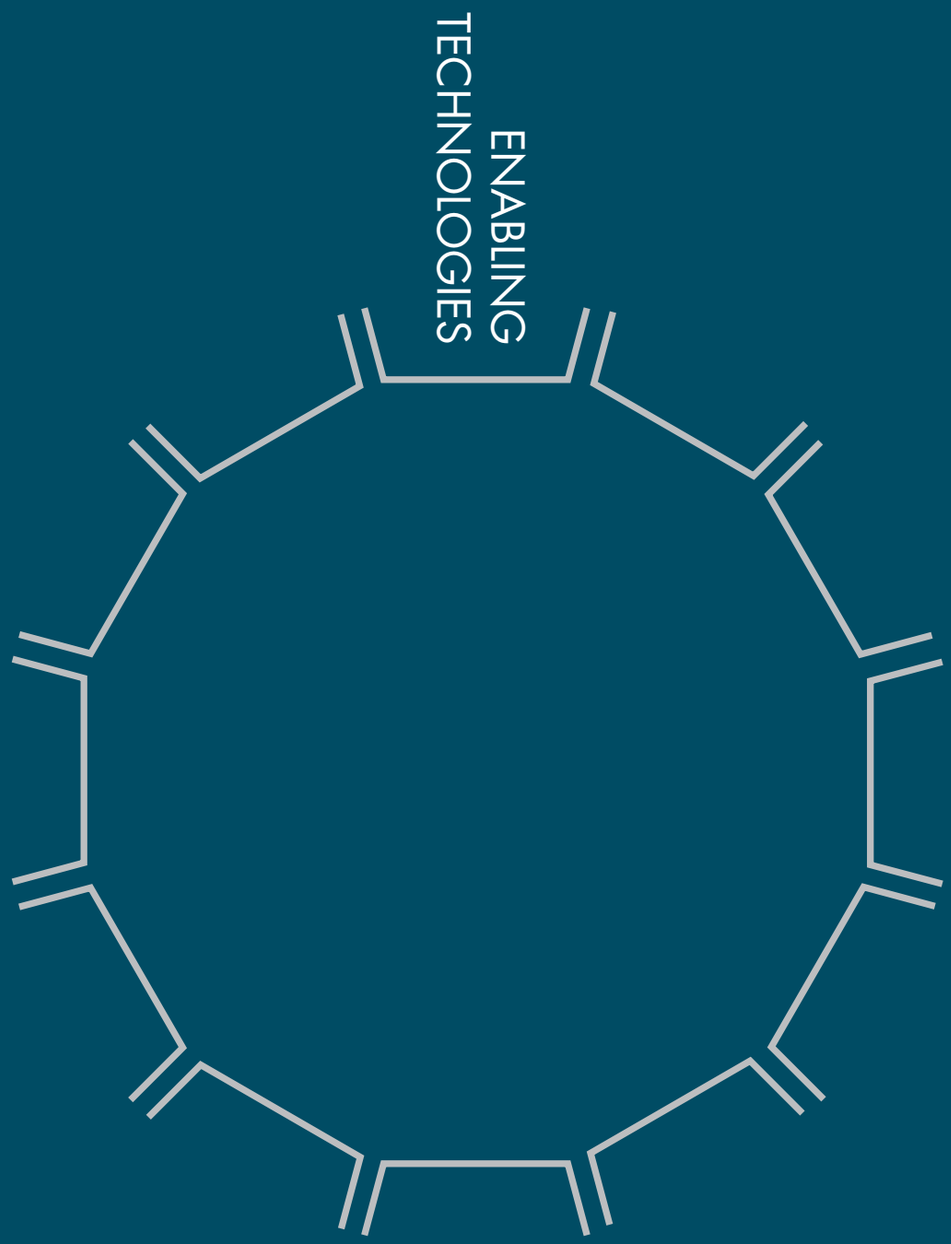
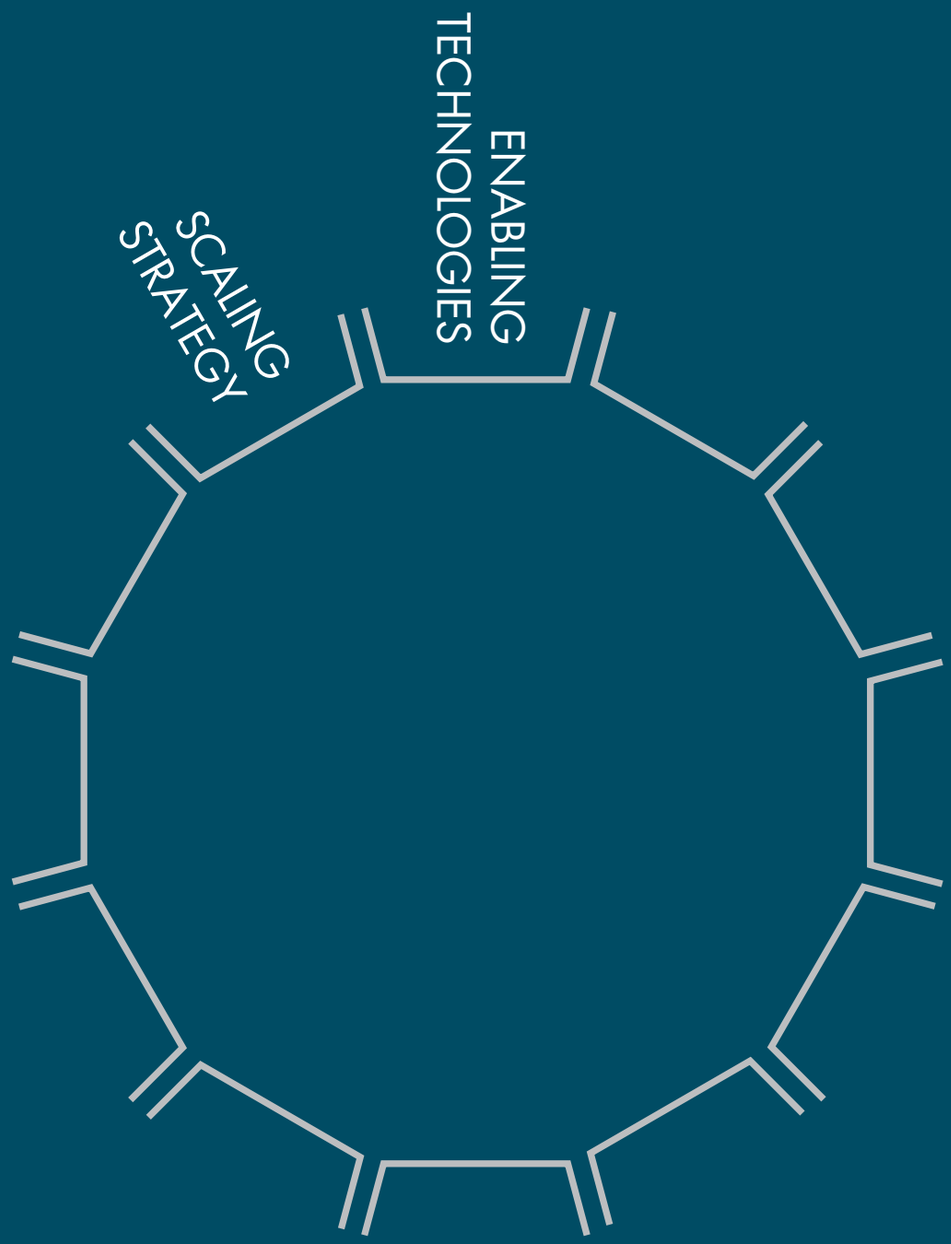

ENABLING
TECHNOLOGIES



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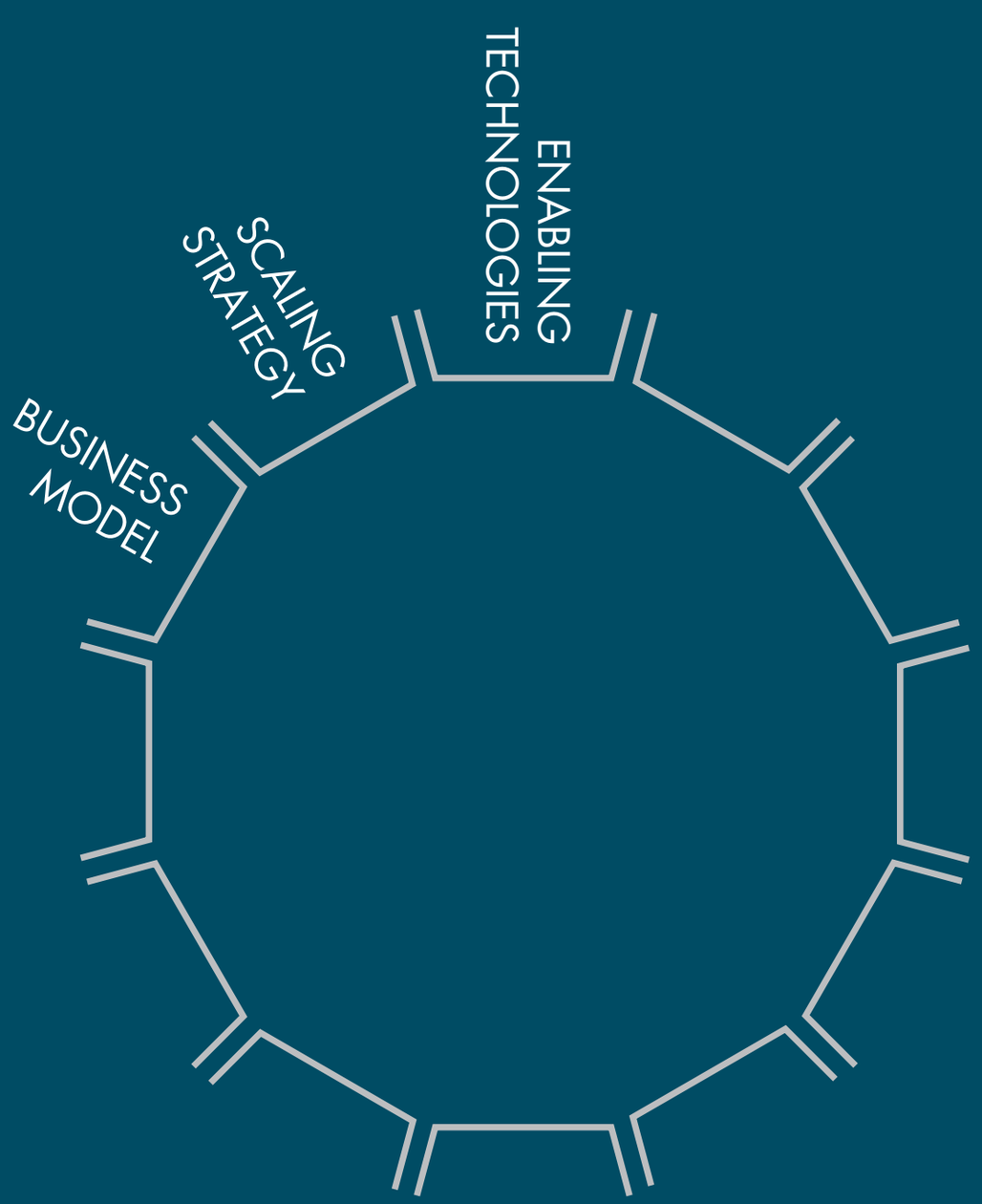

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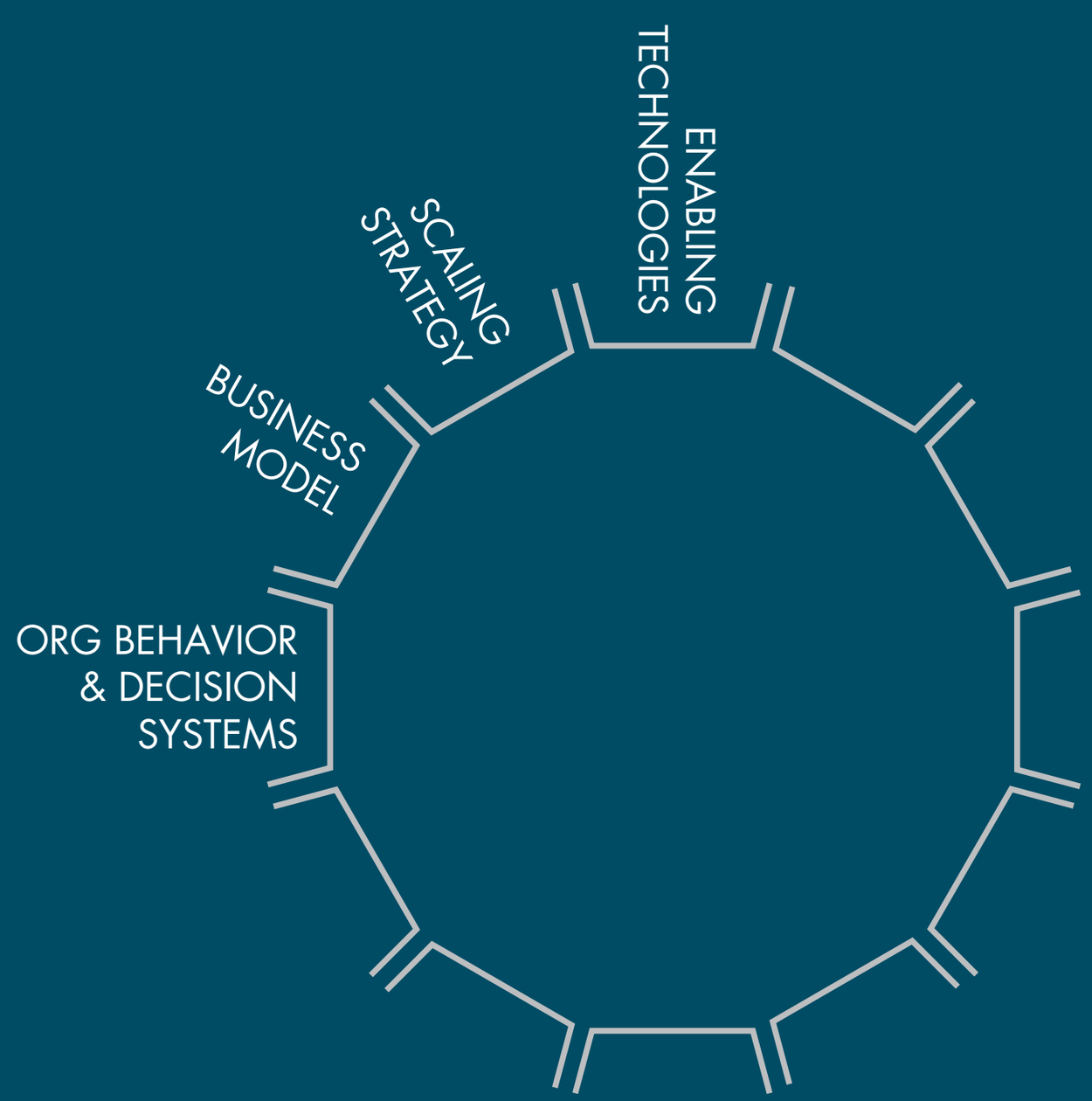
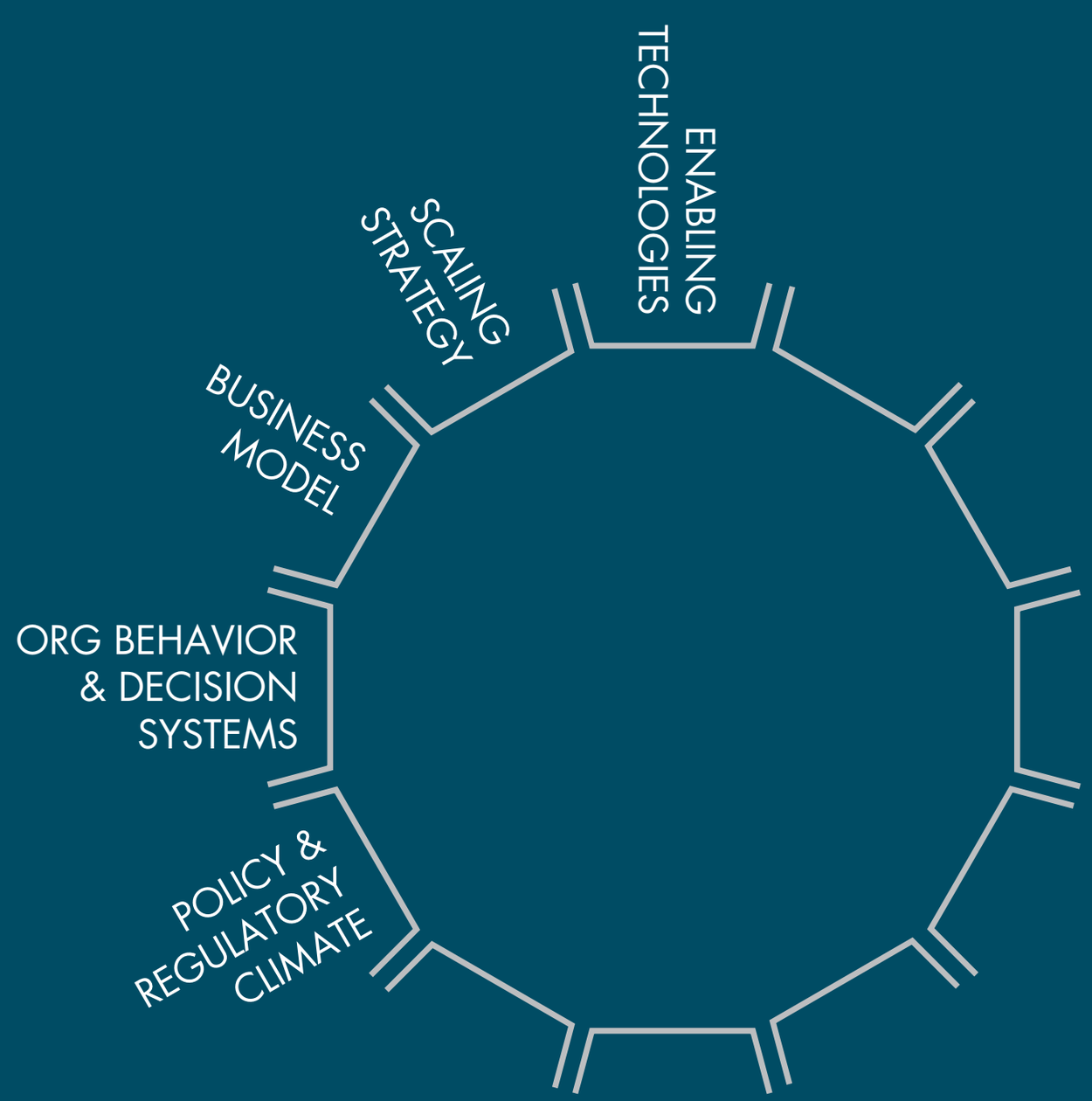

ENABLING TECHNOLOGIES
SCALING STRATEGY
BUSINESS MODEL
ORG BEHAVIOR & DECISION SYSTEMS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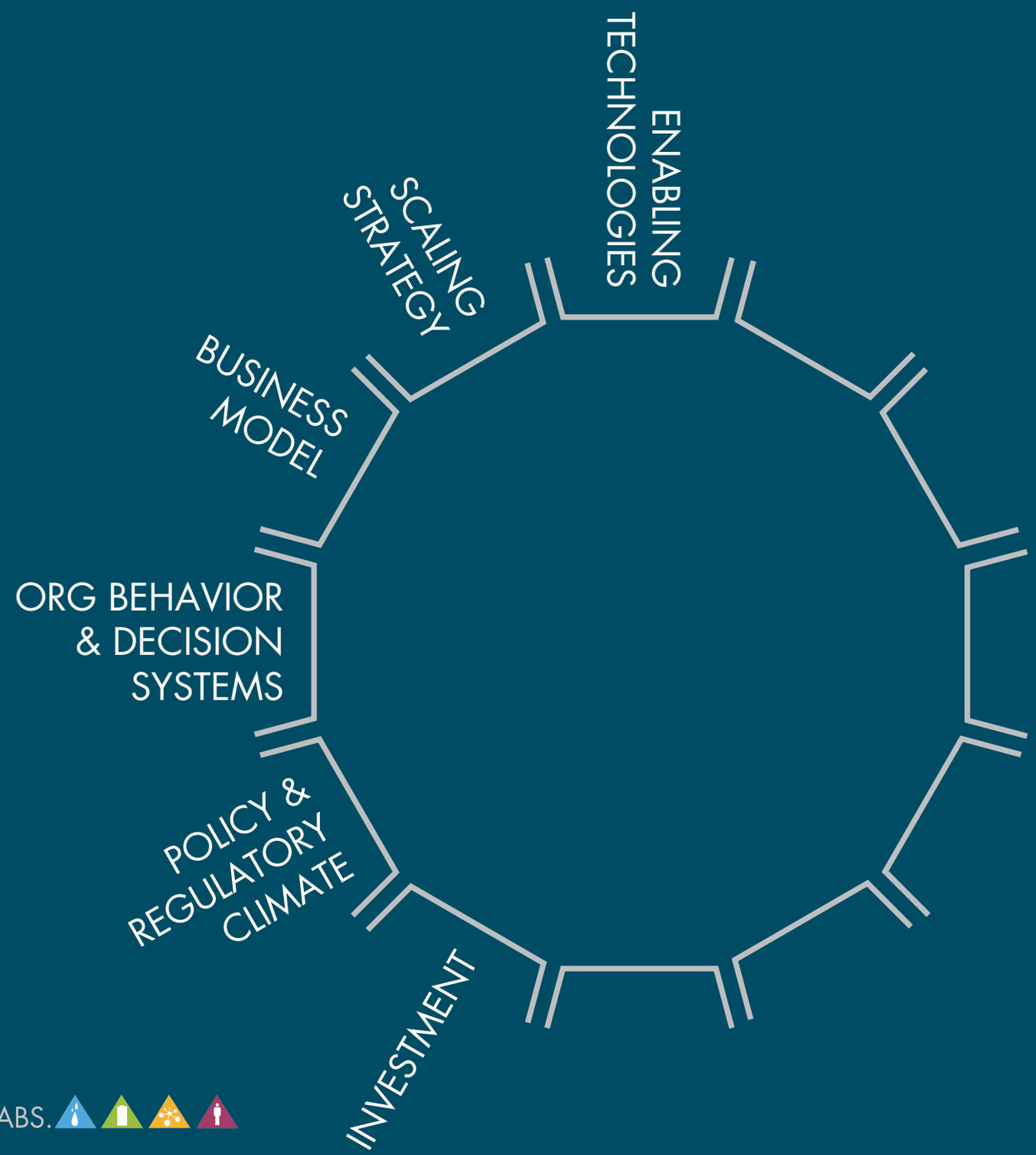
POLICY & REGULATORY CLIMATE



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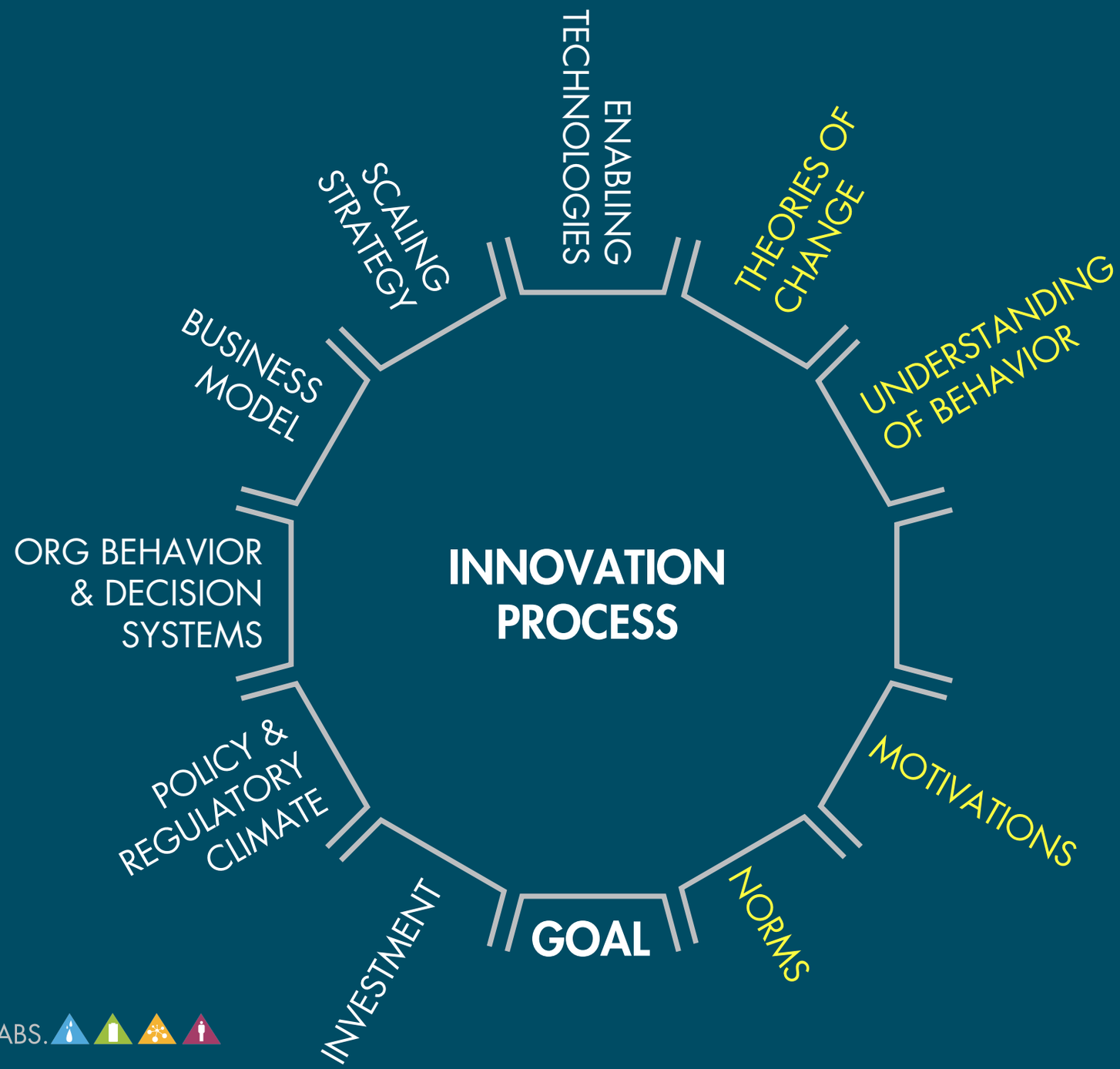

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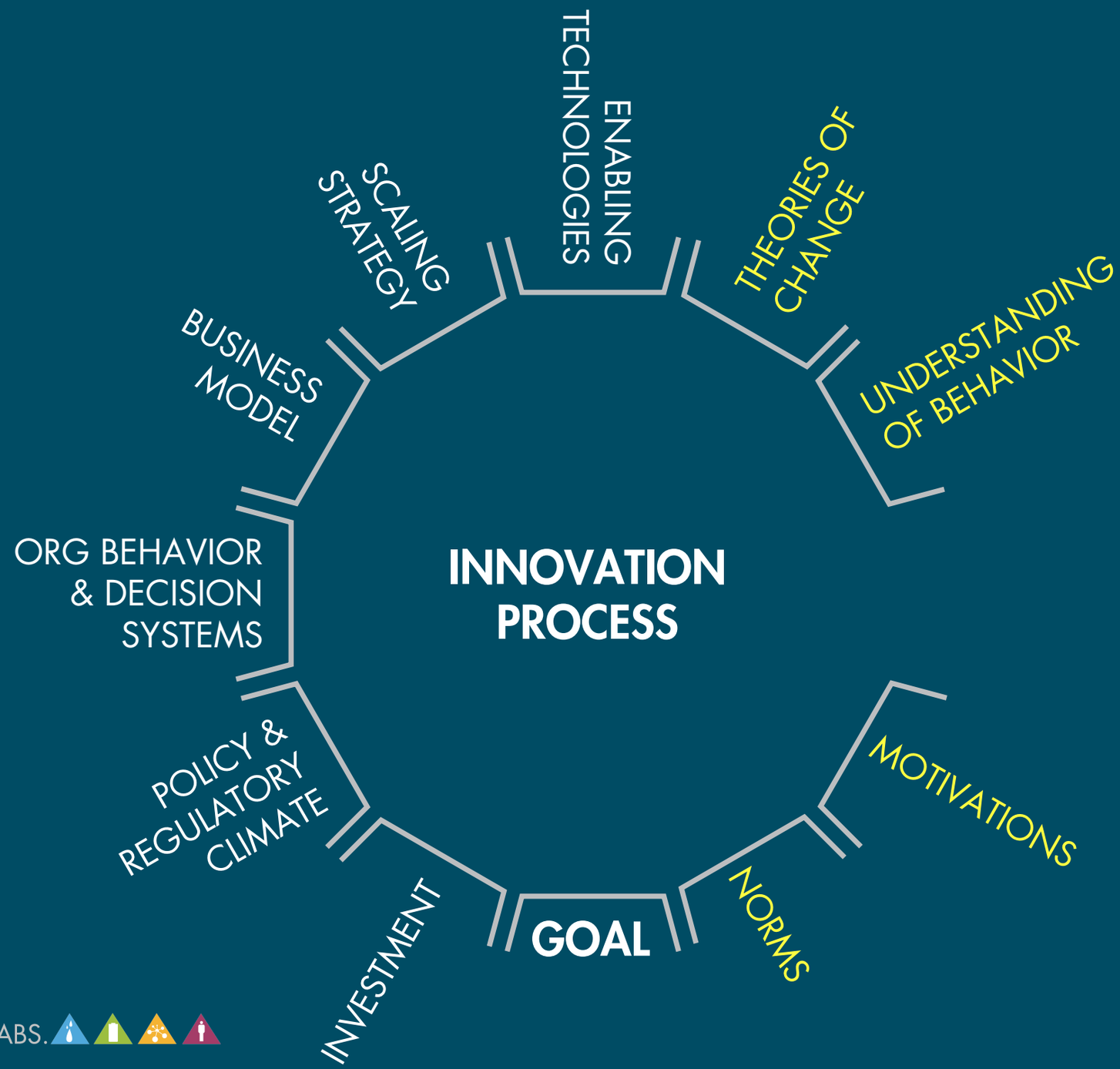

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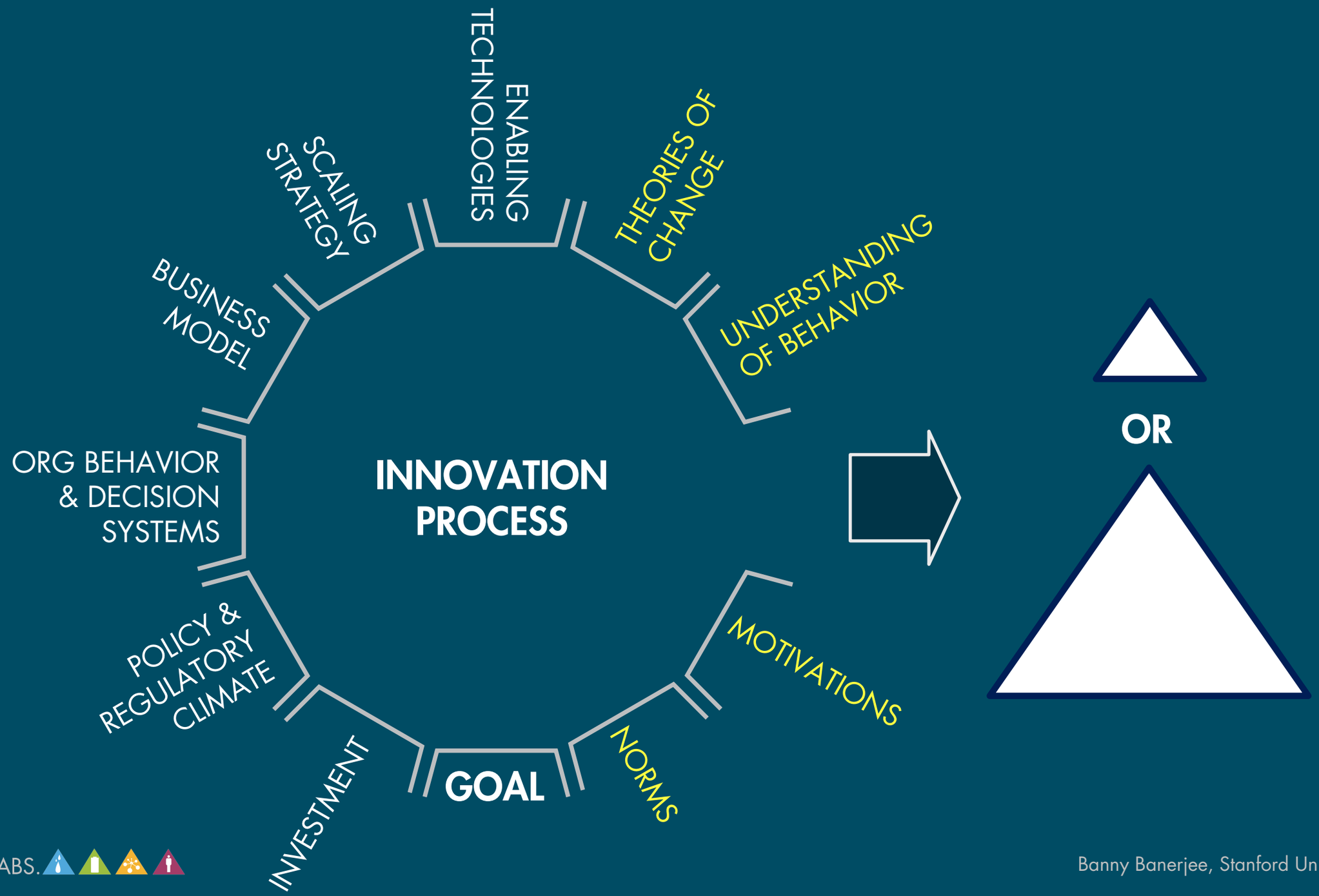

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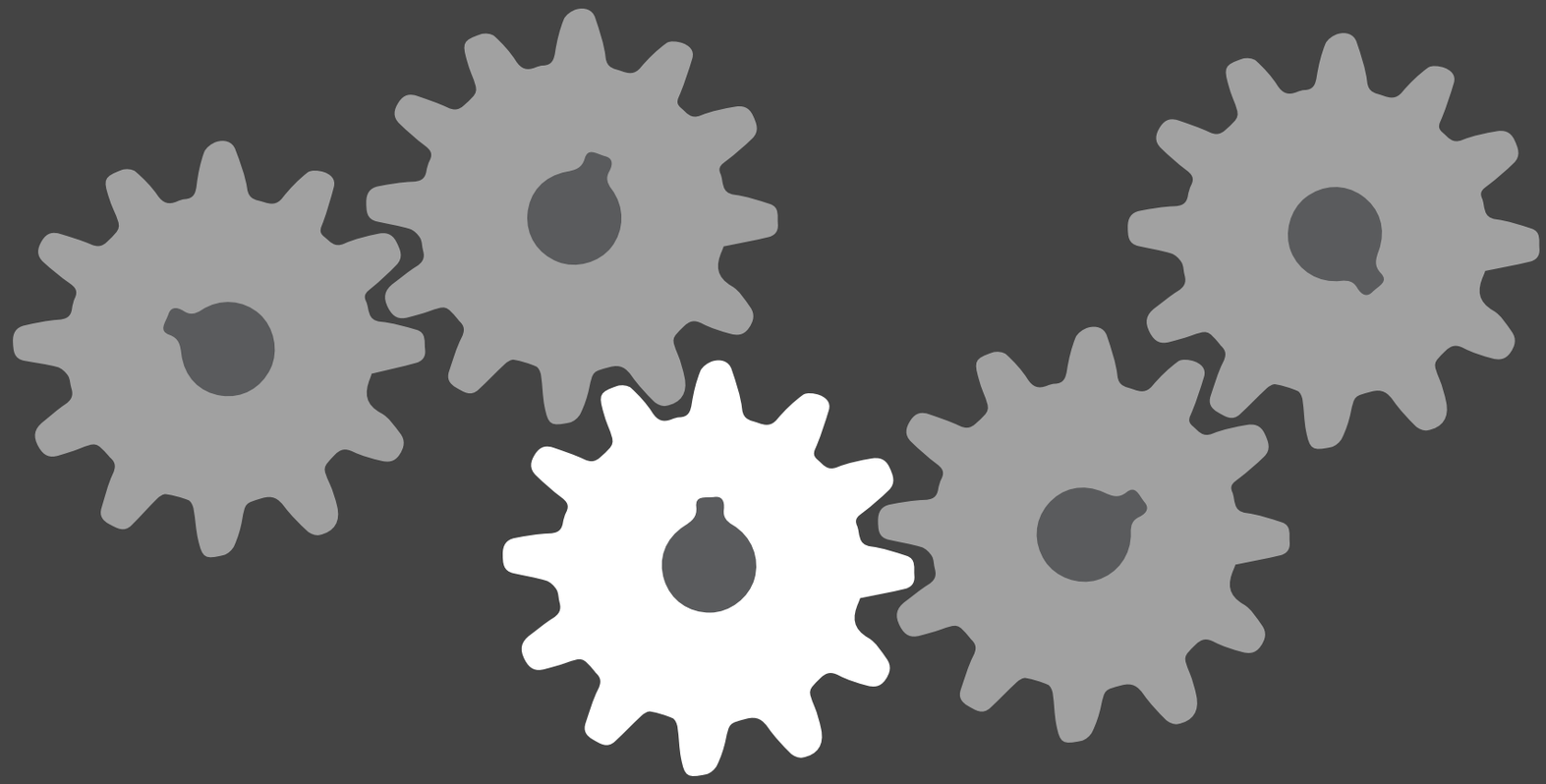
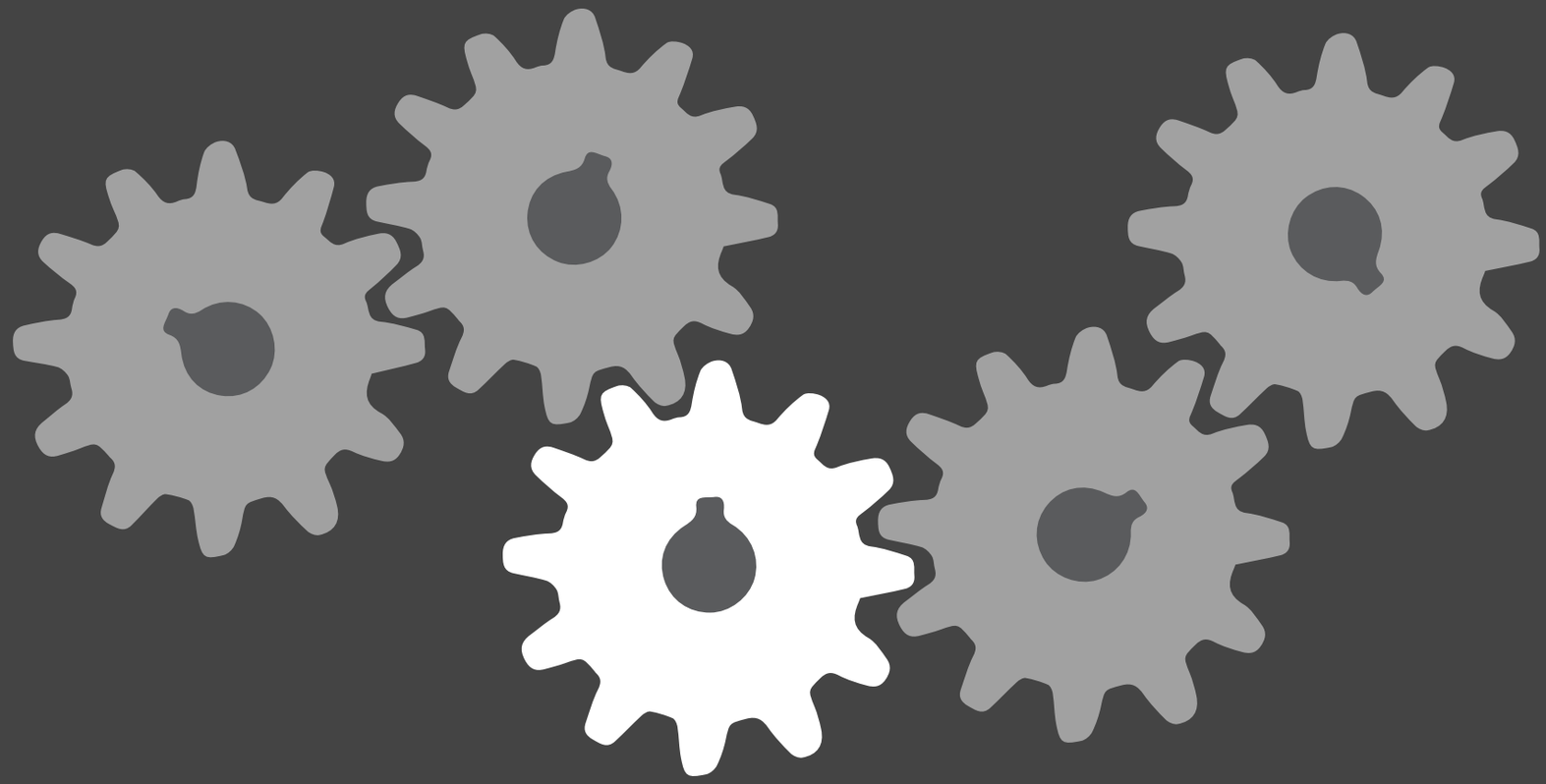
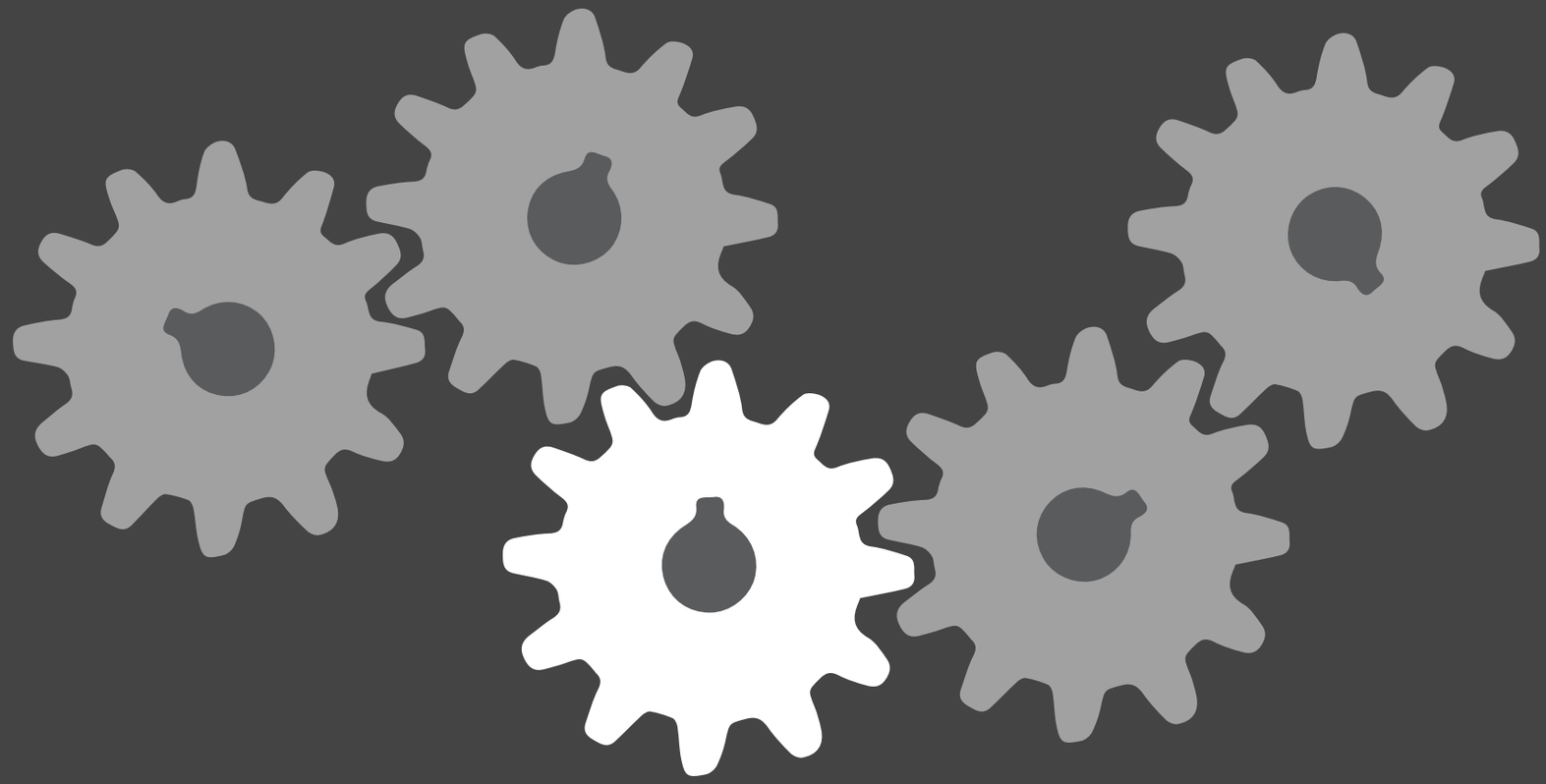
Behavior

The cheapest barrel of oil is the one that we don't use





For most systems, behavior is a choke point



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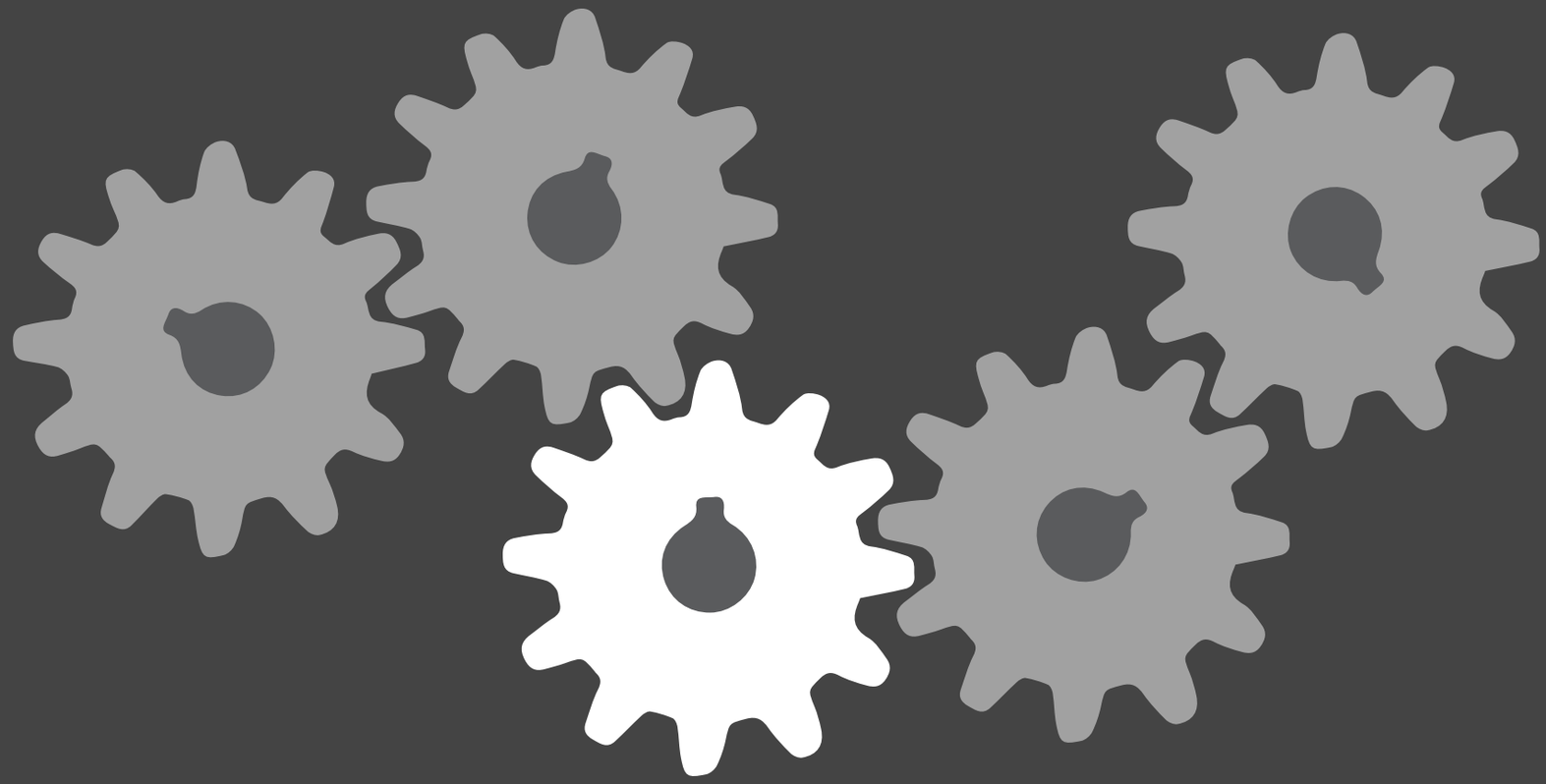
Behavior change allows demand-side interventions



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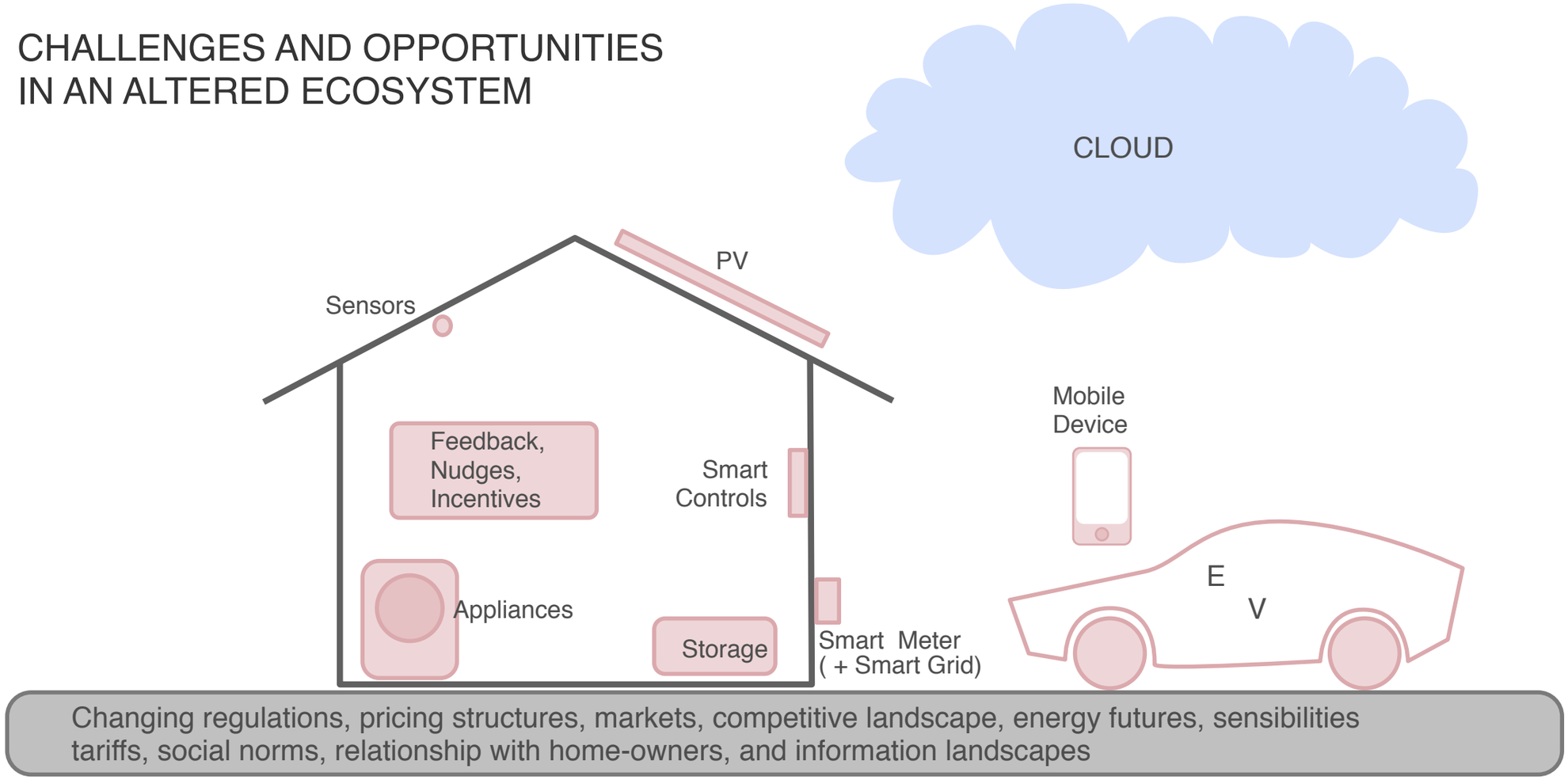
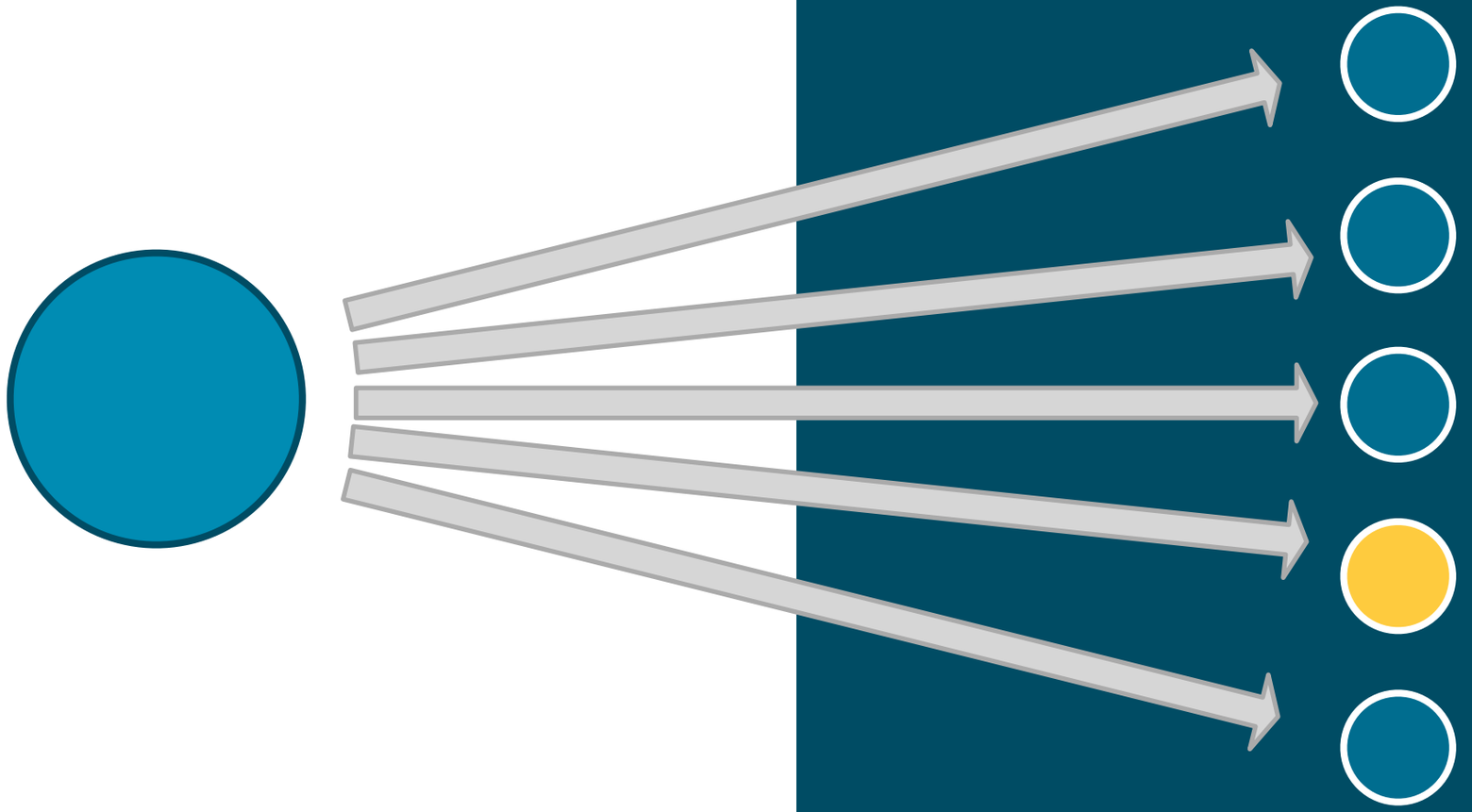
Behavior change can scale faster than infrastructure

CHALLENGES AND OPPORTUNITIES IN AN ALTERED ECOSYSTEM



Upstream Interventions

Downstream Interventions



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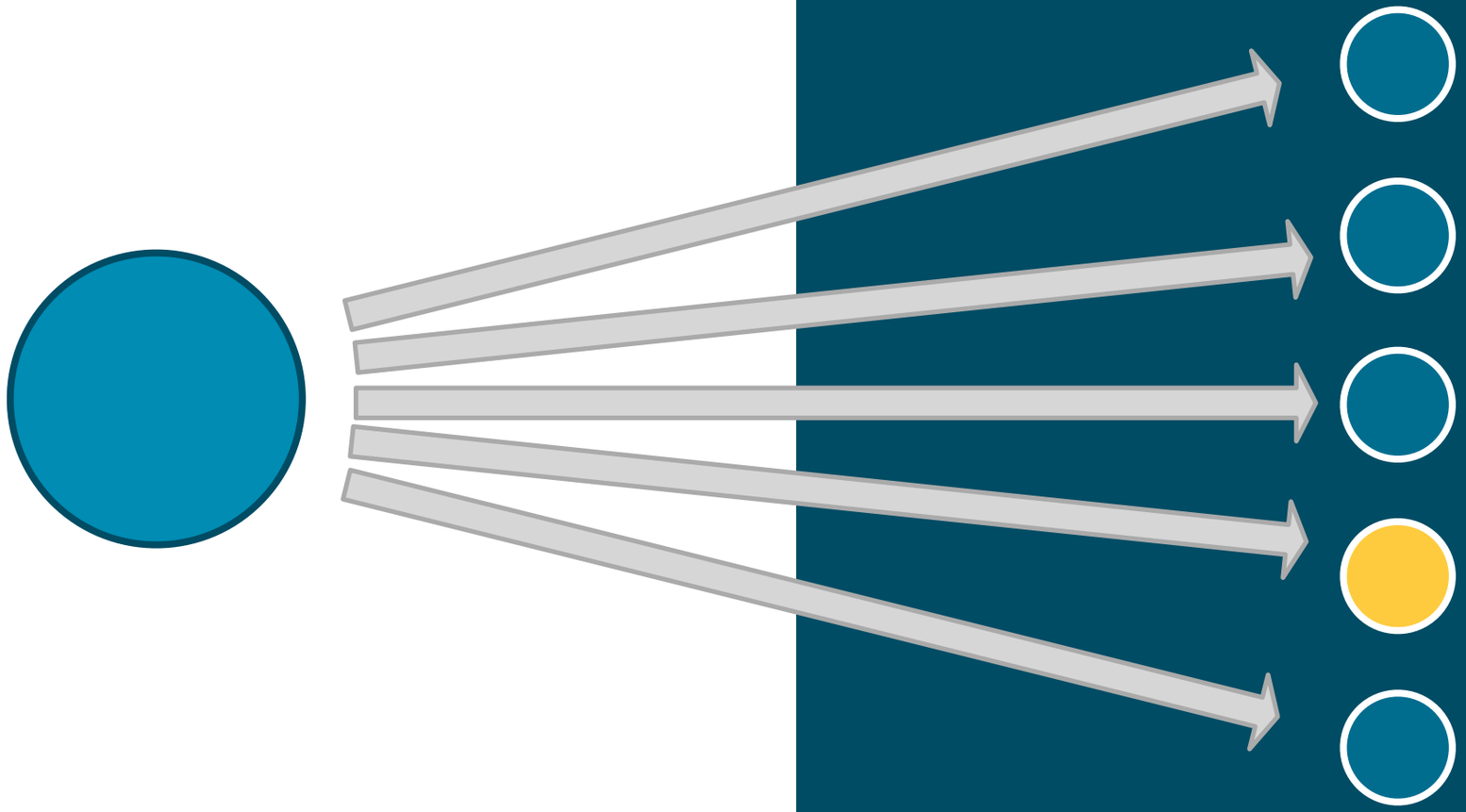
How do we change the energy consumption of a region?

How do we get people to use a different thermostat set-point



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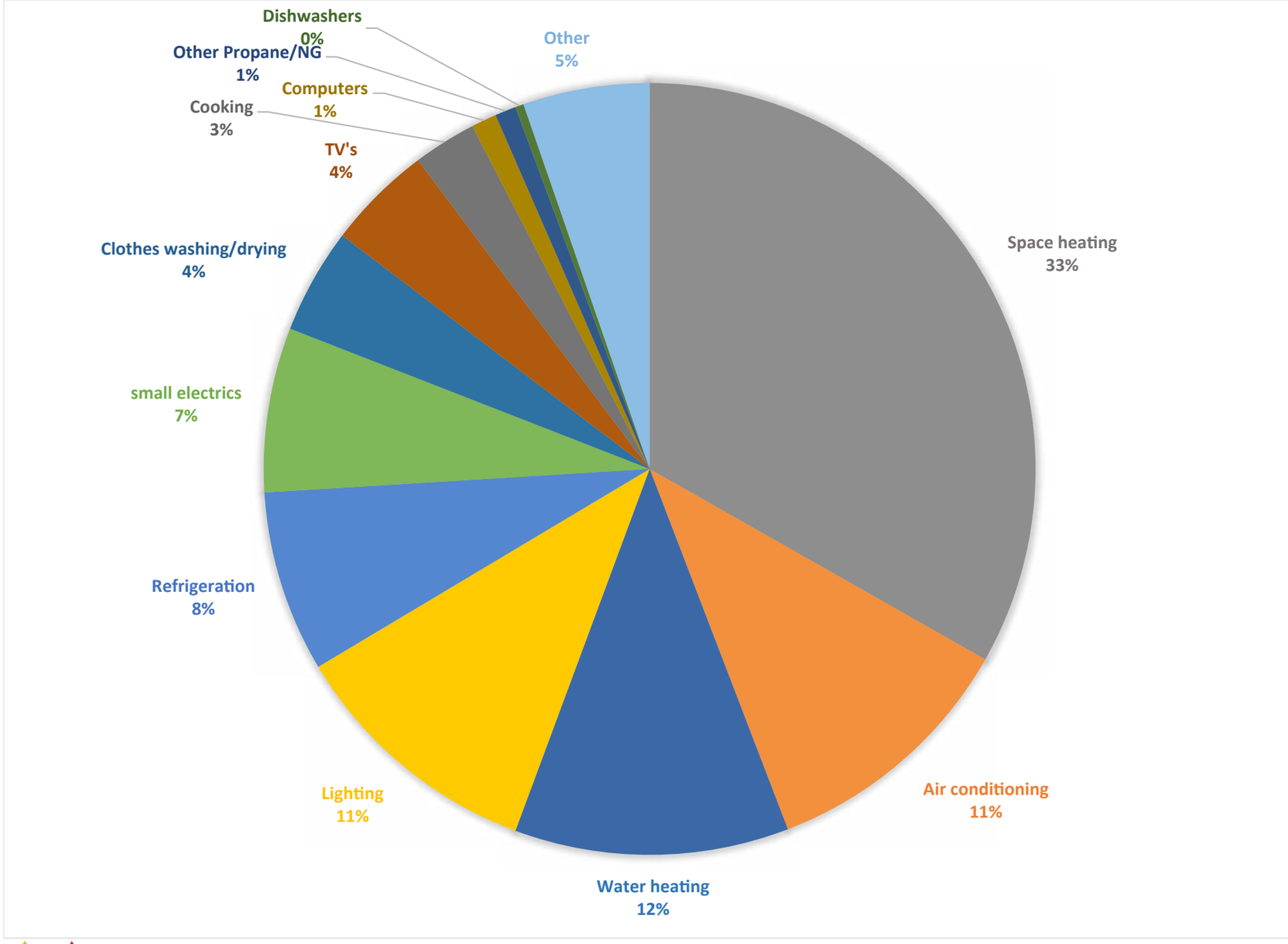
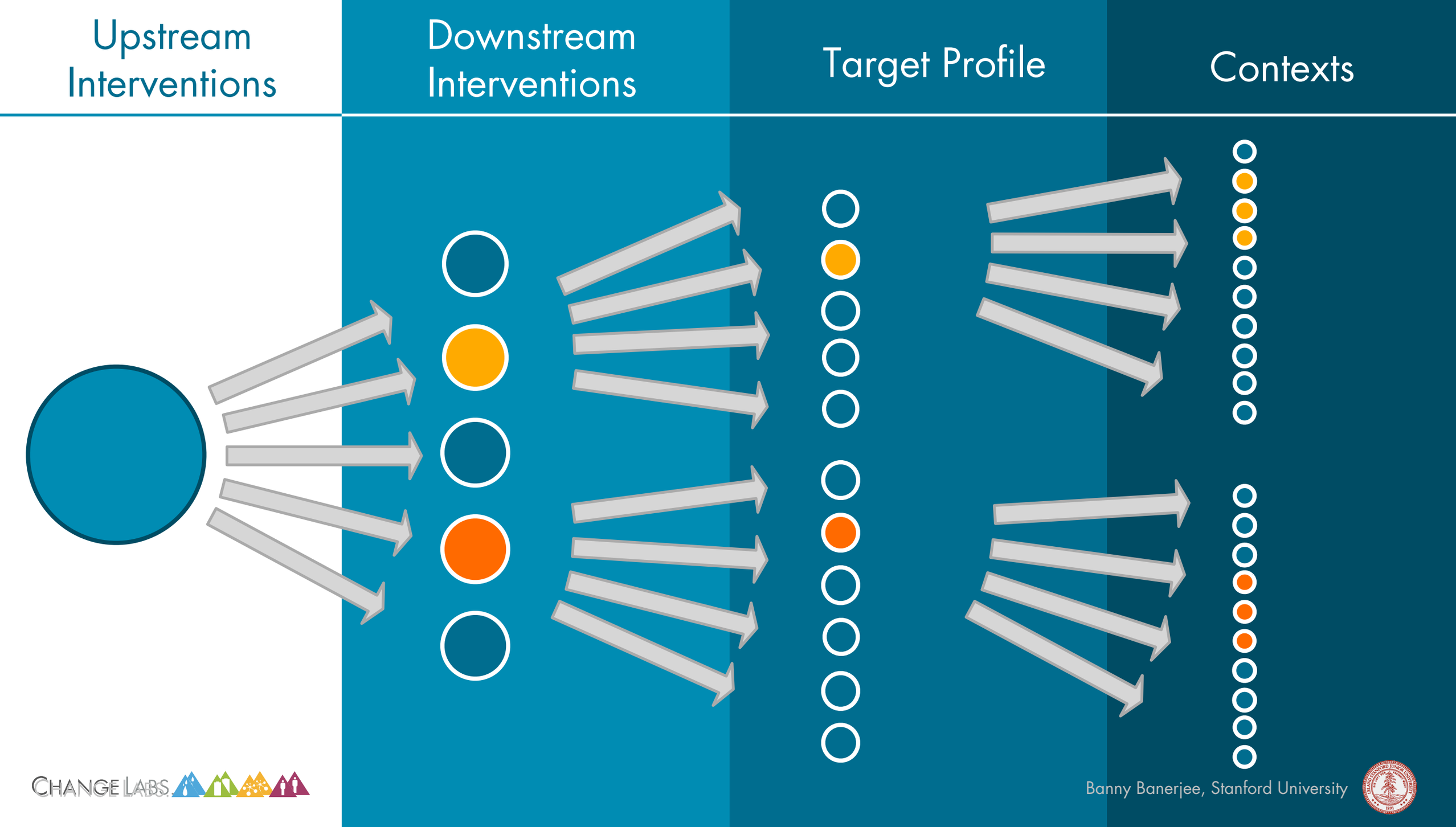
US Home Energy use breakdown (Gardner & Stern)




Upstream Interventions
Downstream Interventions
Target Profile
Contexts
CHANGE LABS
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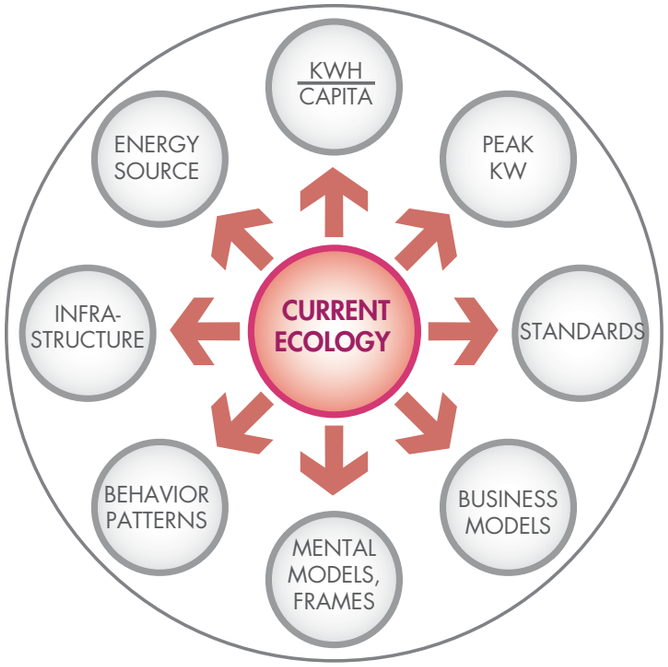
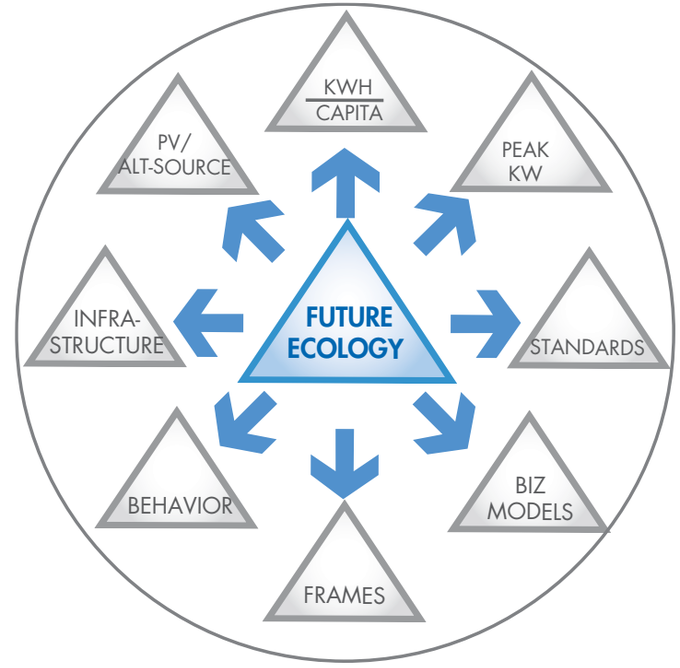

KWH
CAPITA
ENERGY
SOURCE
PEAK
KW
INFRA-
STRUCTURE
CURRENT
ECOLOGY
STANDARDS
BEHAVIOR
PATTERNS
BUSINESS
MODELS
MENTAL
MODELS,
FRAMES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ALT-SOURCE
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FUTURE
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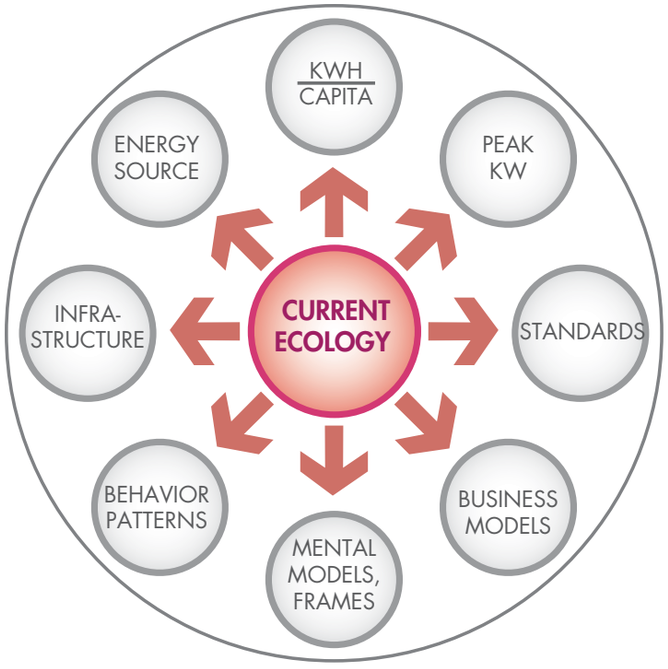
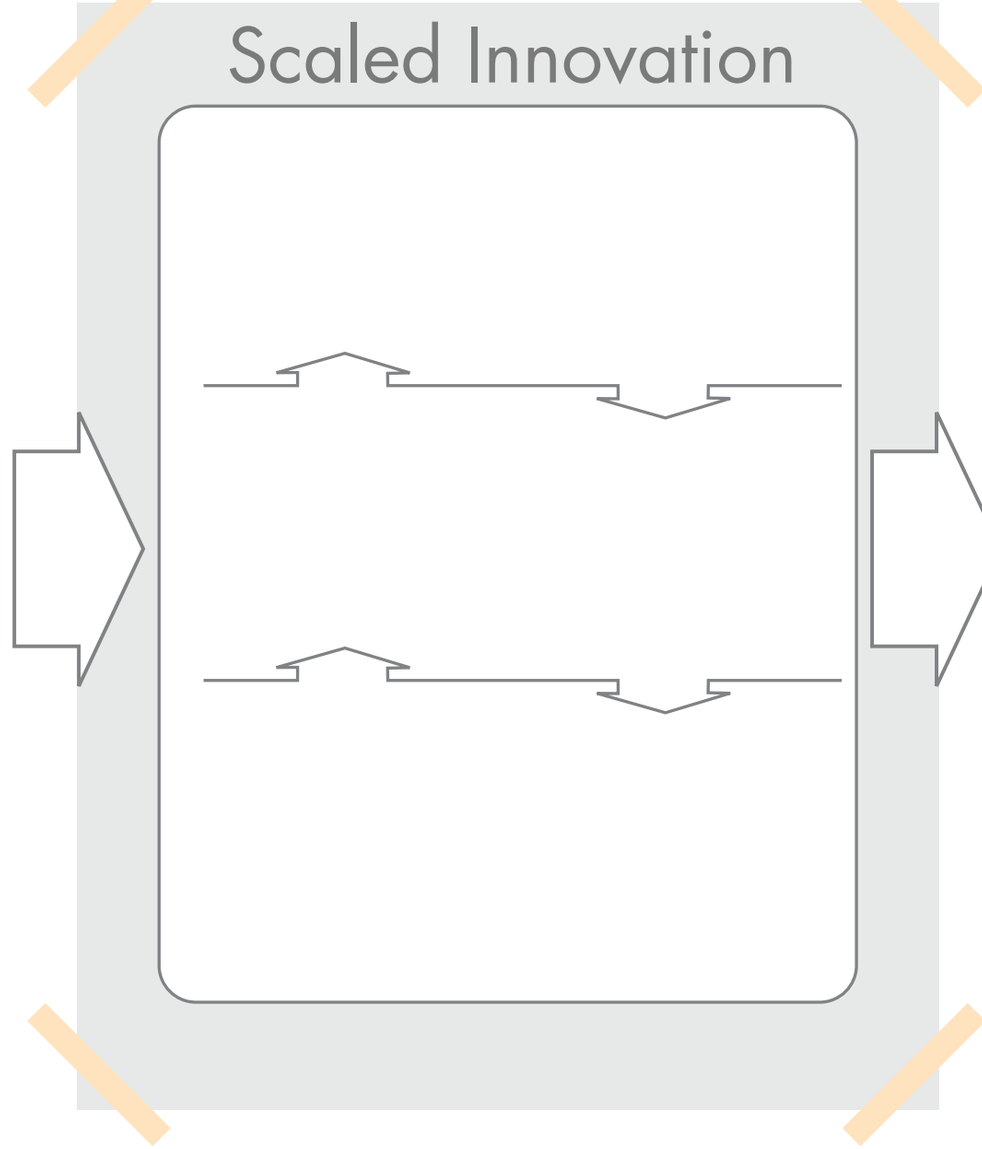
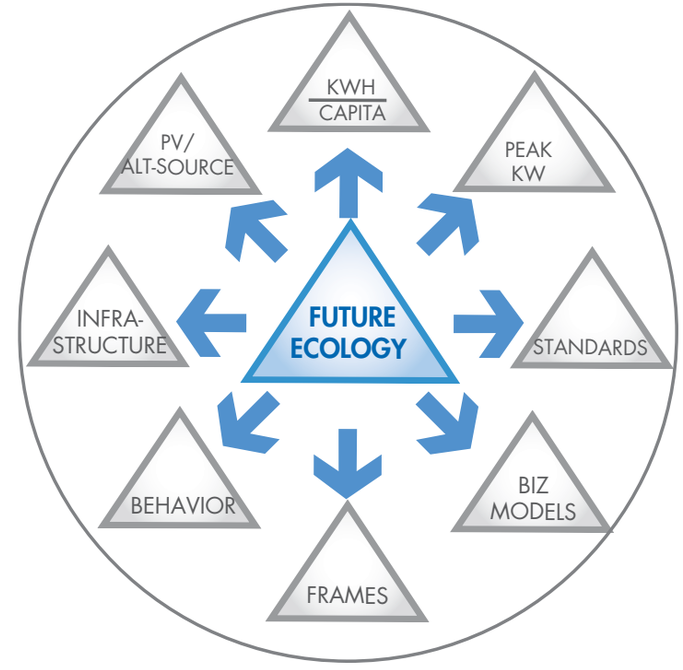
Scaled Innovation







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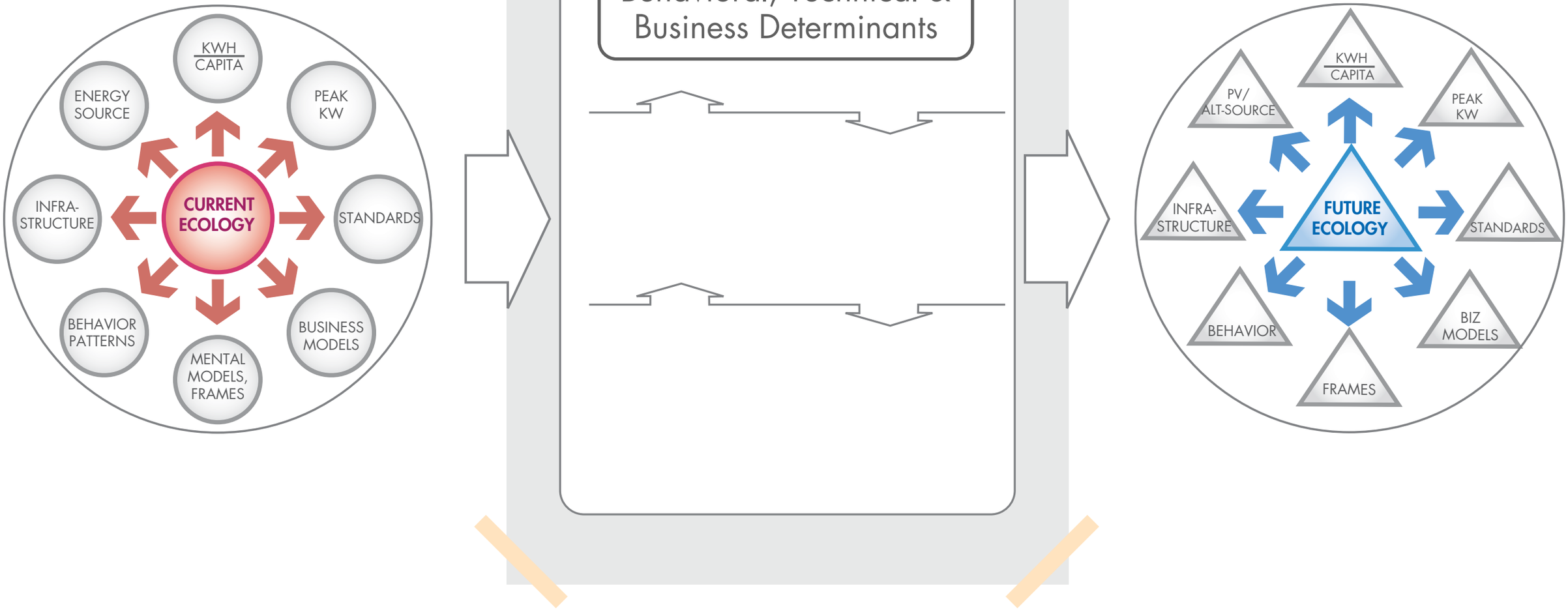

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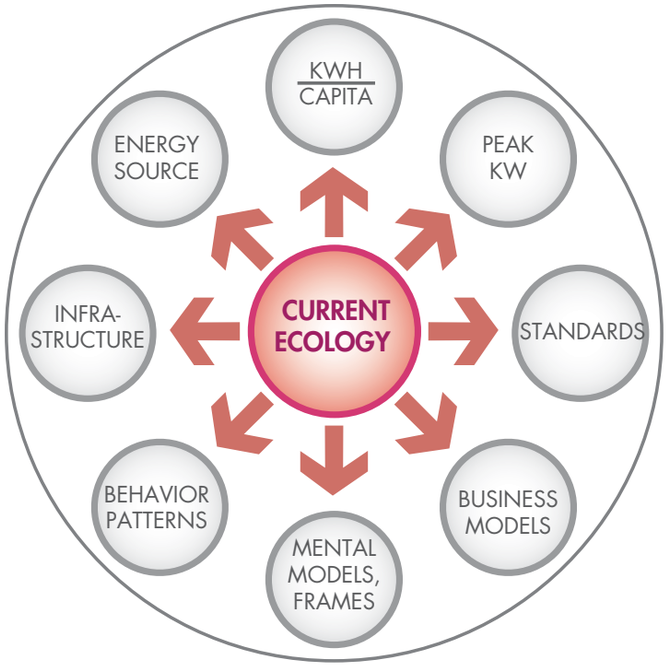
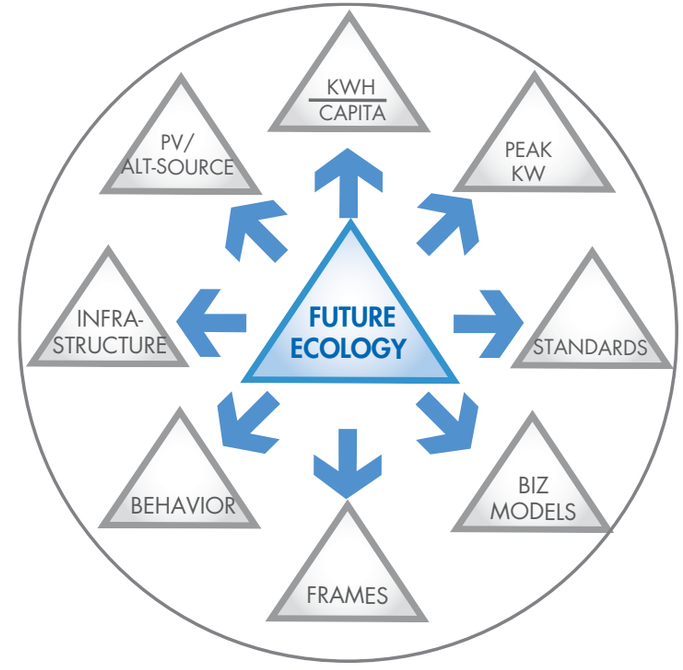


Scaled Innovation

Behavioral, Technical & Business Determinants

Strategic Framing
Scaled Concepts



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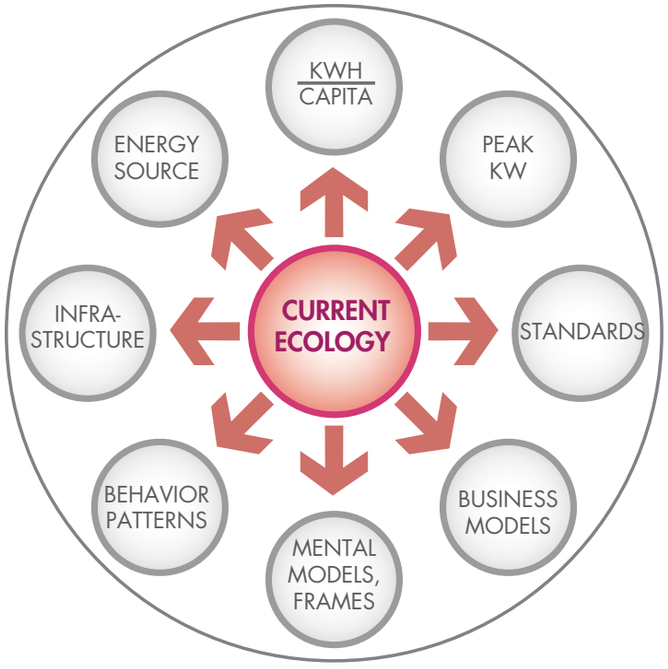

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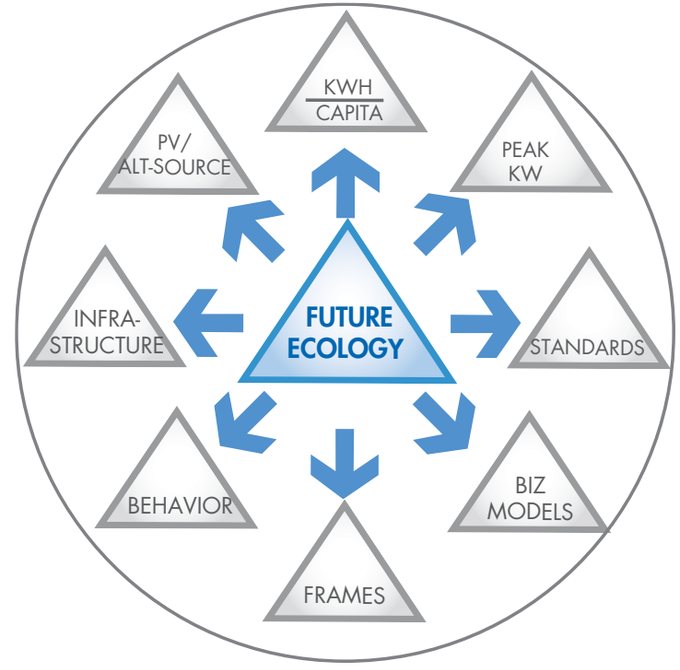
Strategic Roadmaps Implementation & Scaling



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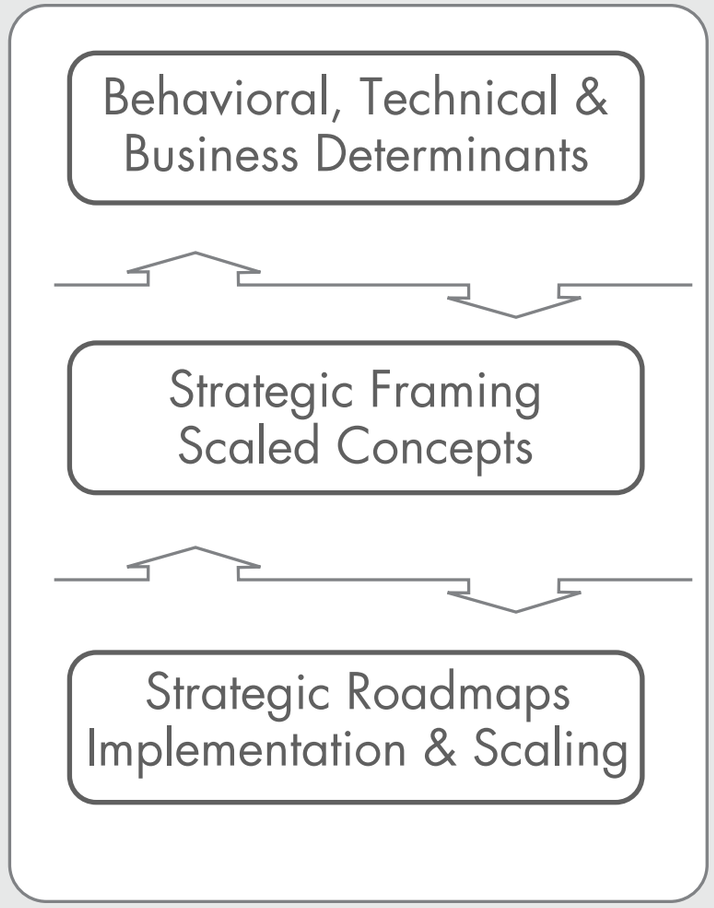
Scaled Innovation



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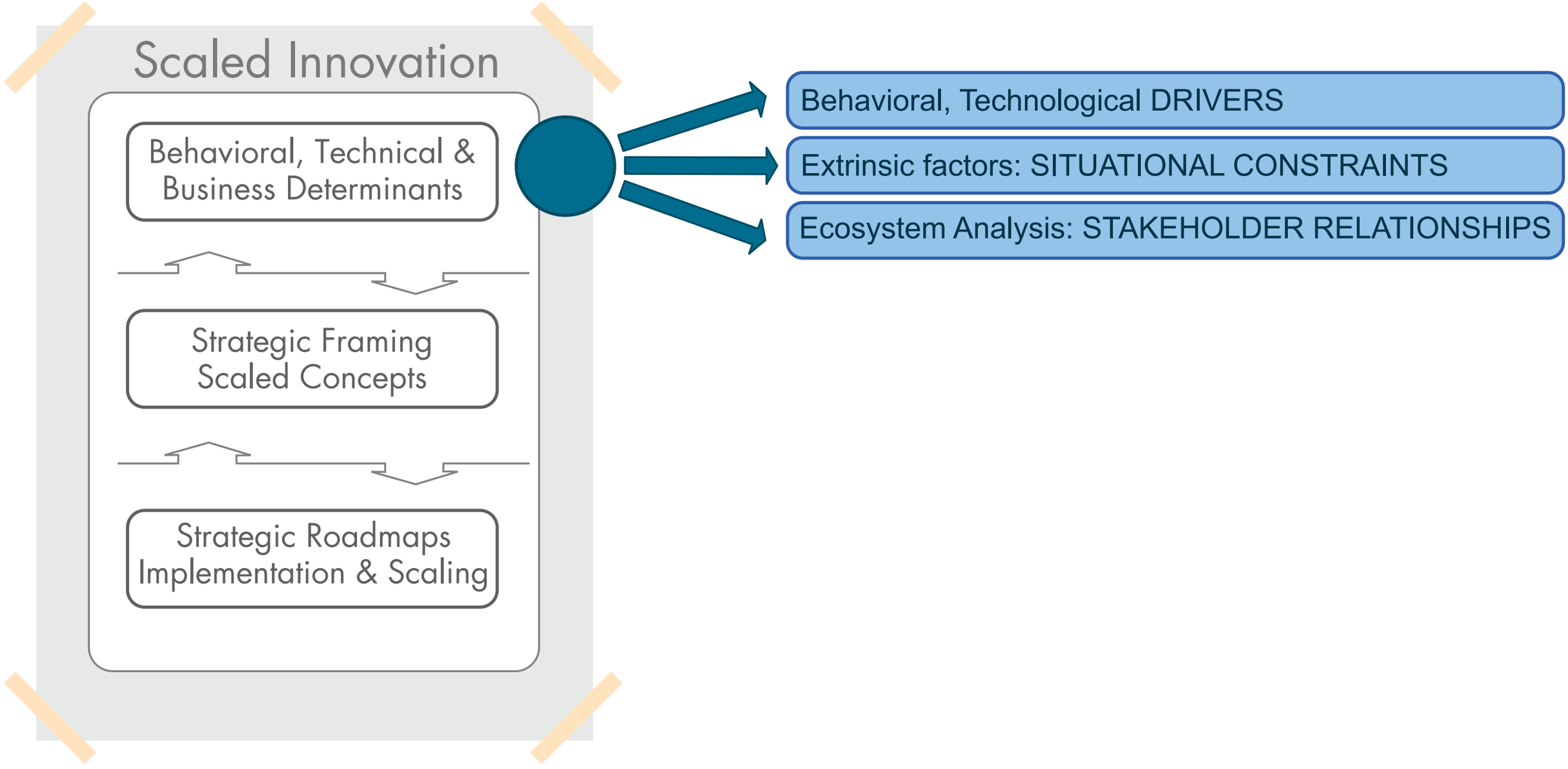
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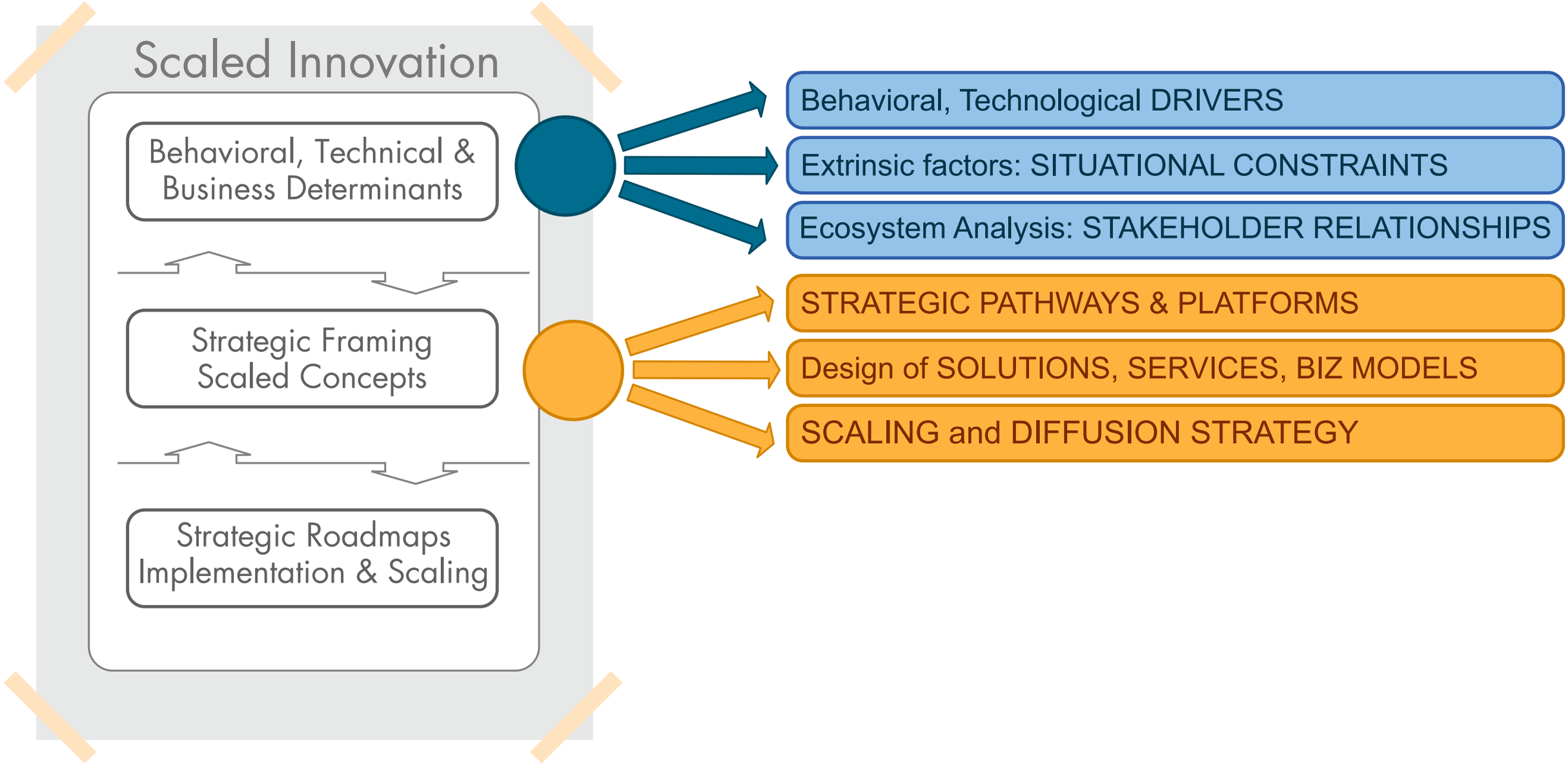
Behavioral, Technological DRIVERS
Extrinsic factors: SITUATIONAL CONSTRAINTS
Ecosystem Analysis: STAKEHOLDER RELATIONSHIPS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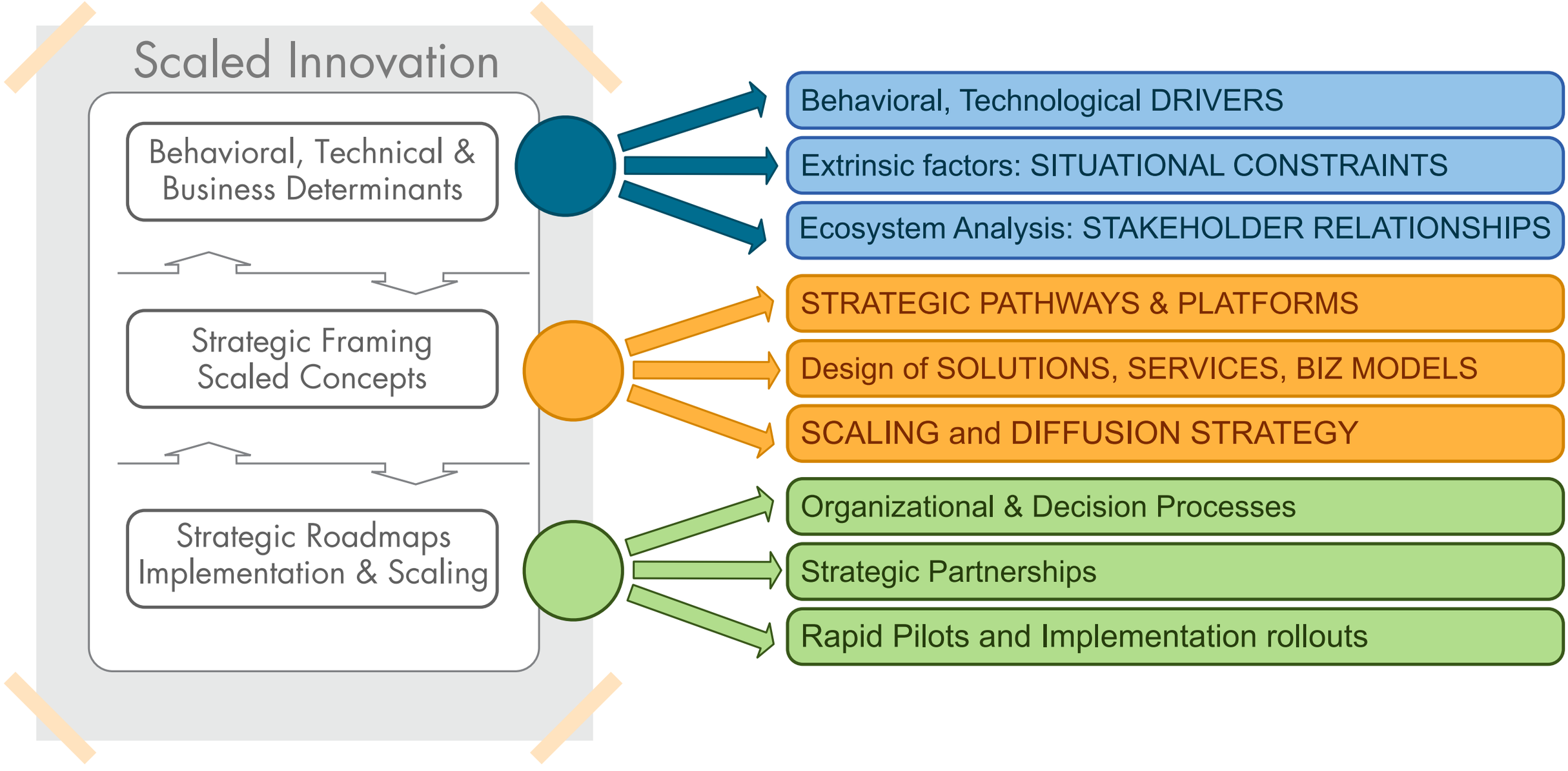
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SCALING and DIFFUSION STRATEGY
Organizational & Decision Processes
Strategic Partnerships
Rapid Pilots and Implementation rollouts

The innovation process is like an accordion

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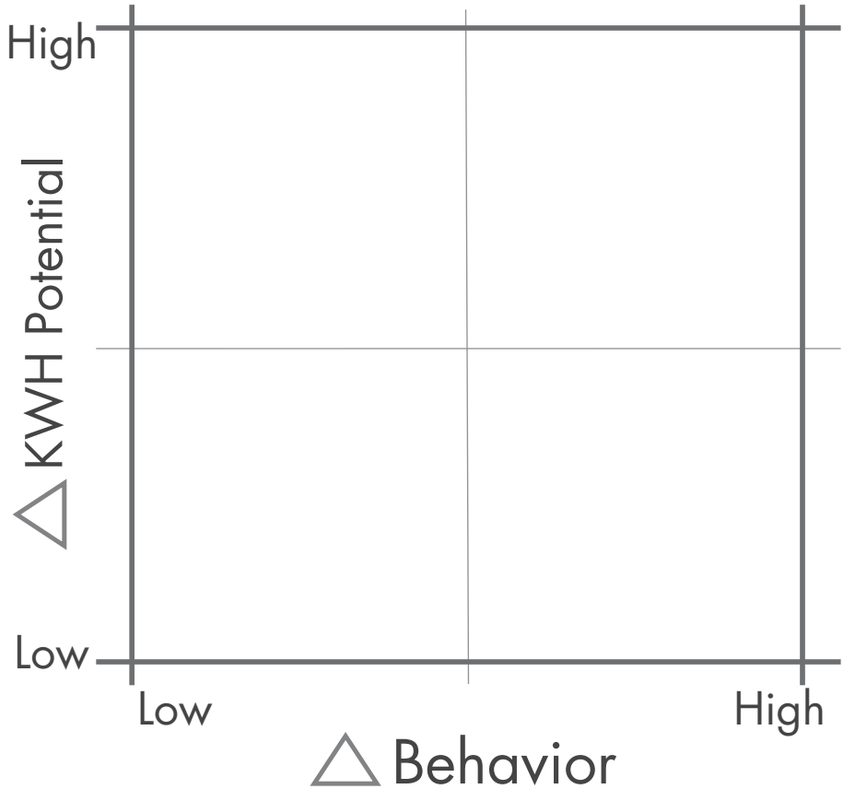
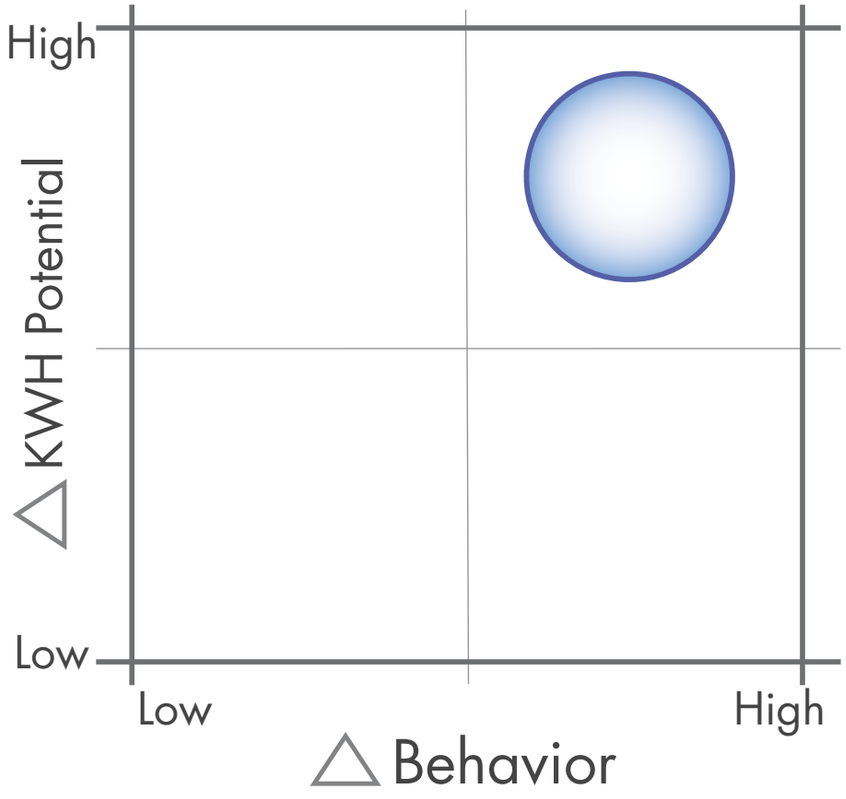
Cognitive intervention

Piggyback intervention

Stealth intervention


High
KWH Potential
Low
Low
High
Behavior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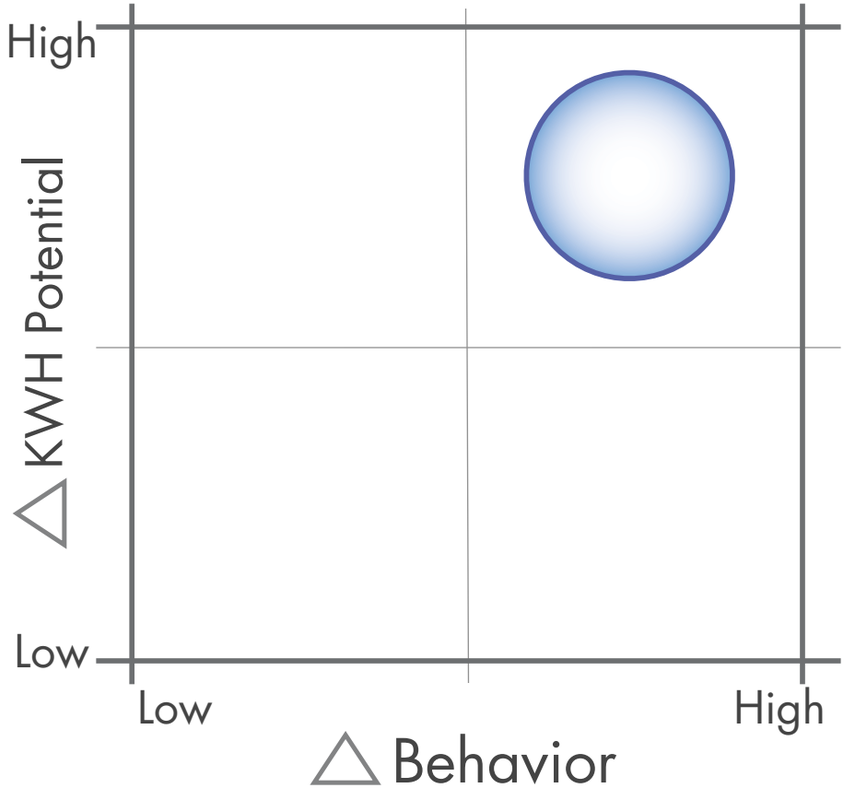
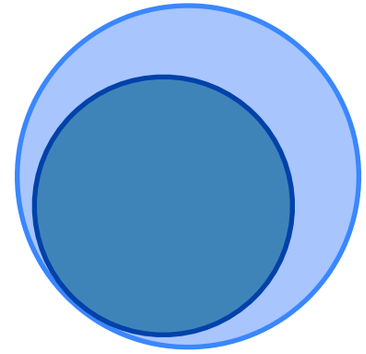
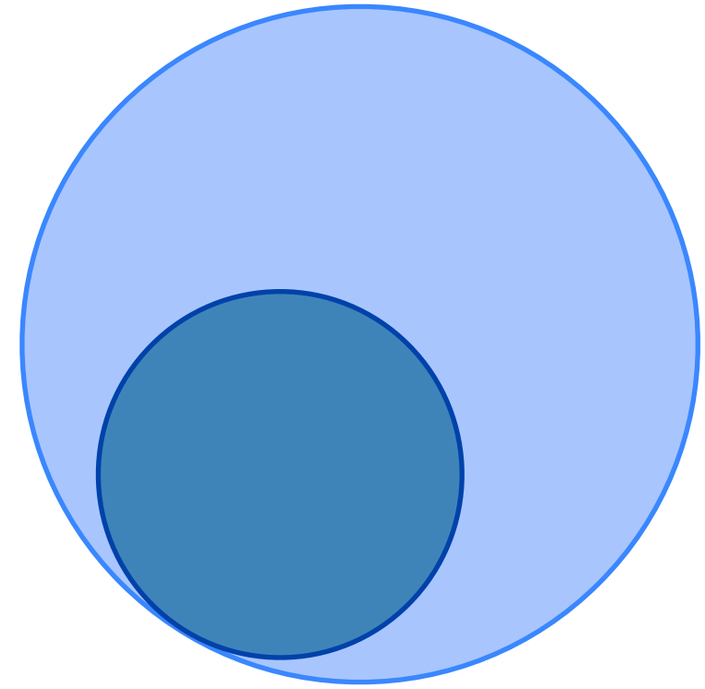




High Conversion
of Small Segment

Vs



Low Conversion
of Larger Segment

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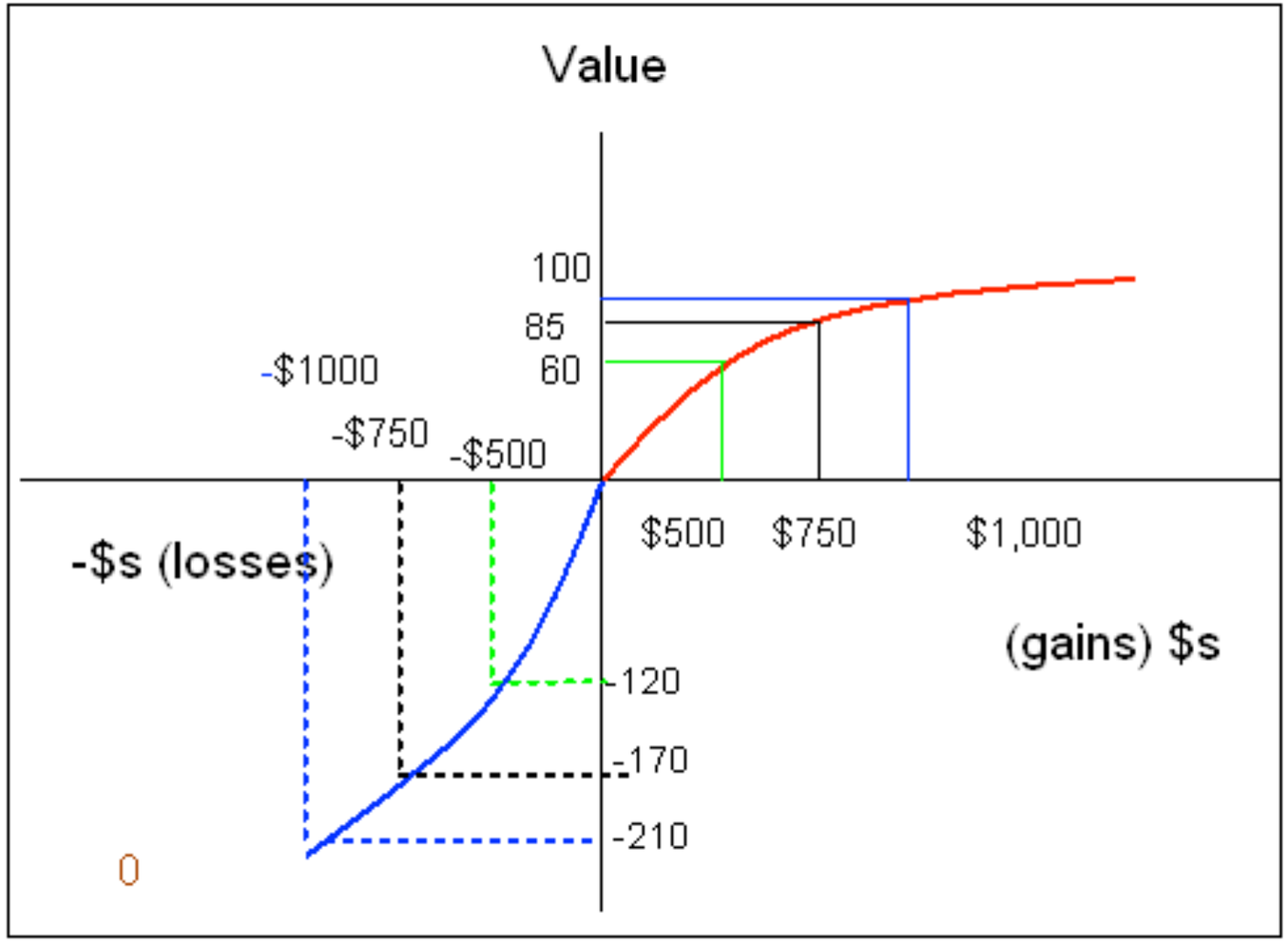
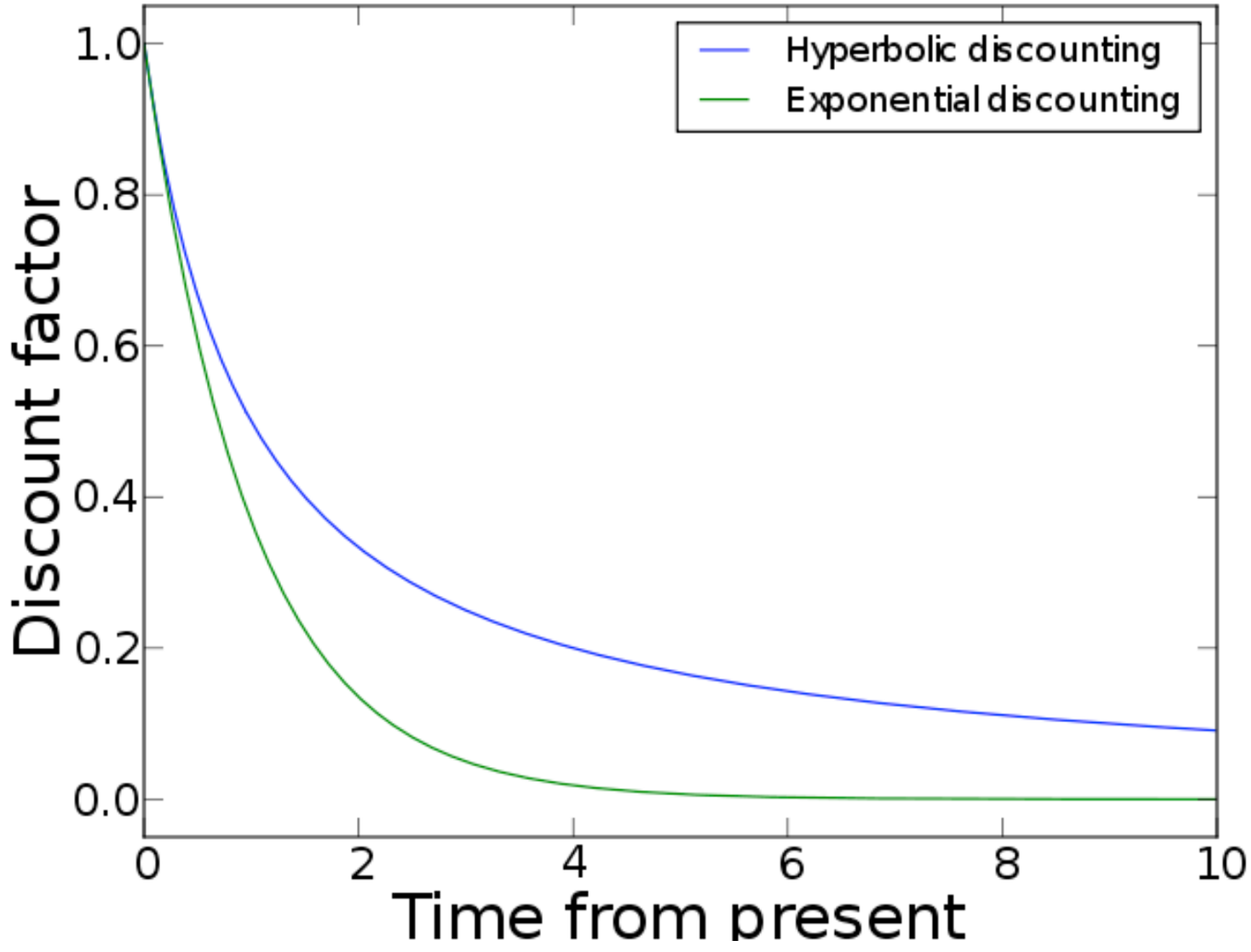
Prospect Theory



Losses are felt twice as much as equivalent gains.

(Kahneman and Tversky 1974)

Hyperbolic Discounting



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If you don’t build in scale, it will be harder to build it in later

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Does this lead to a new culture and choice architecture?

Banny Banerjee, Stanford University

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*

Scale of Implementation

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Time to Impact

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Potency of Intervention

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Scale of Implementation

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Degree of Integration

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Thank you