A NEW BUSINESS INNOVATION ARCHITECTURE FOR PORTUGAL



COTEC Portugal
Somos Inovação

in collaboration with

EY
Building a better working world



Messsage from the President of the Board

One of the biggest challenges faced by companies in the digital era is to balance the demands for the quest of efficiency in the Present with innovation for the creation of the Future. Managing the tension between generating and allocation of resources is a huge challenge for the leadership, but that secures the survival and prosperity of the company in different horizons. It is not sufficient to respond more efficiently and faster to today´s clients, it is also equally necessary to anticipate the priorities of tomorrow's clients, not only of the existing ones, but above all, anticipate the needs of potential clients, identifying in which niches and sectors will be the major problems that may be solved through the know-how and industrial experience owned by the company.

These opportunities may be explored if companies are able to unlock the know-how and experience owned, whilst combining these assets with new external knowledge. To that end, companies will need to promote a culture of greater openness to collaboration networks, hire qualified professionals and invest on the sourcing of new knowledge like any other business raw material. This specific combination of ingredients in a success formula and its continuous application on the transformation of business is the underlying reason that explains the sustainable growth of the companies analysed.

Following a partnership between COTEC and EY, this Report identifies the weaknesses of companies on the exploration of new growth opportunities, whilst evidencing that it is possible to plan the growth of companies through innovation. The Report presents a new referral to transform business and create growth new horizons for the Future, generated from the business of the Present. We trust that this new innovation management tool may contribute for a more structured planning in the next stages of growth, thus allowing a higher return of the innovation processes.

Francisco de Lacerda
(President of the Board)

AGENDA FOR TODAY

1.

Introductory notes on innovation 04

2.

Current state of innovation in Portugal 11

3.

Lessons learnt from case studies 15

4.

Recommendations for a sustainable innovation 24

1.

INTRODUCTORY NOTES ON INNOVATION

The world continues to change at a fast pace, with a decreasing return on product-focused innovation



LESS THAN 6 WEEKS

Time to develop a digital app.

1%

Estimated devices actually connected out of what could be connected.





500 BILLIONS

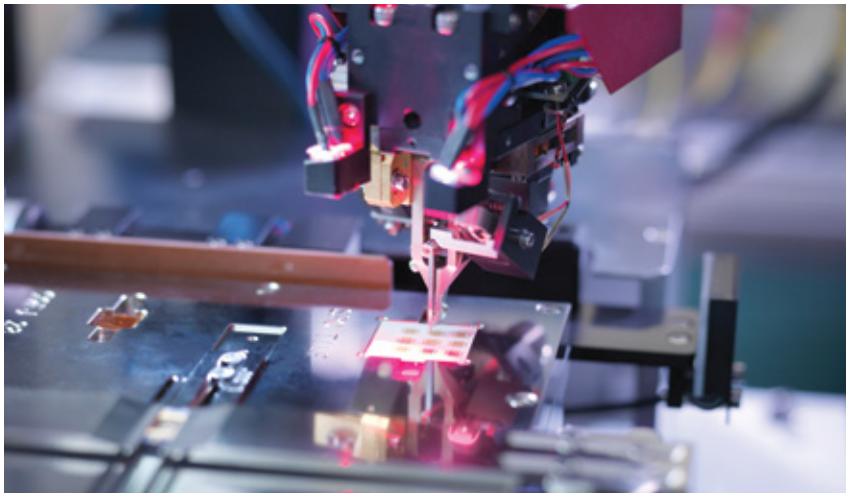
Internet connected "things" by 2020, including sensors, RFID chips.

35 DAYS

Days for a new technology to reach a critical mass of 50 million users.



Disruption: When, not if.





50%

of fortune 500 companies in 2006 no longer exist

75%

of S&P 500 companies will be new entrants in 2027

68%

of employees declare being disengaged



"The battle between every startup and incumbent comes down to whether the incumbent innovates before the startup gets distribution"

Peter Hinssen (Nexxworks)

Addressing innovation challenges require an ambidextrous agility

TOP 3 CHALLENGES FOR INNOVATION



#1

27%

Speed from idea generation to innovation launch[1]



#2

19%

Management approval and funding new ideas[1]



#3

17%

Commercialization and launching innovation[1]

89%

of companies launched an open innovation program[2]

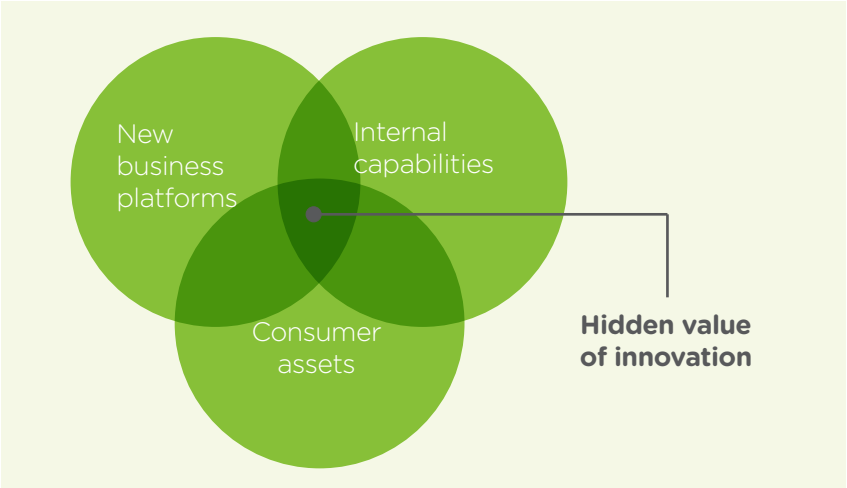
17%

of them achieve concrete results[2]

Notes

[1] EY Advisory Innovation Global Trends Survey 2016, interviewees N=400 global executives;
[2] EY 2016 Innovation Survey , over 100 interviewees from start-ups and incumbents; EY analysis

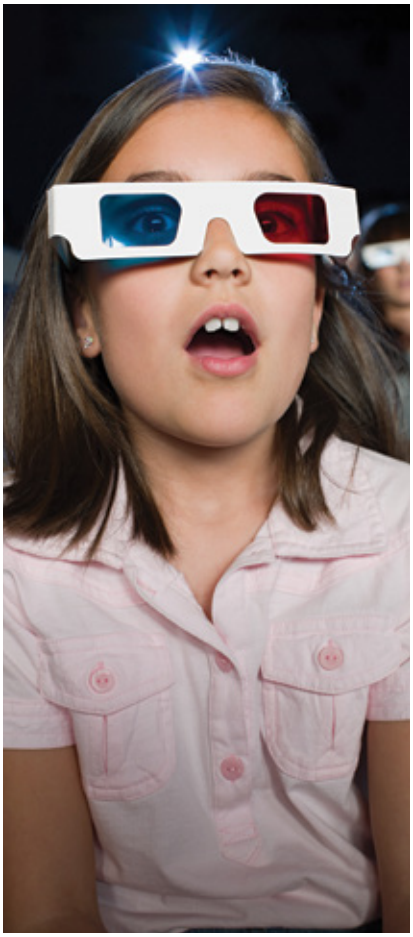
Hidden assets are released when combined with new knowledge...





Employees' creativity is the main asset not properly explored by companies

The role of innovation champions is to facilitate the access to internal knowledge spread around business units and employees.



New business platforms

Combination of products, adjacent technologies or specific marketing strategies for a new segment.

Consumer assets

Unexploited segments with high potential or proprietary information used for enhancing consumers relationship.

Internal Competences

Combination of underused capabilities with core capabilities or with the acquisition of external complementary capabilities.

... being a critical path to address innovation challenges that corporate face



Some innovation myths, and their debunking

MYTH

INNOVATION IS ABSTRACT

Myth Debunking

It's not abstract nor random: it is a business capability that requires continuous and sustainable approach according to the innovation vision and line of action defined

MYTH

INNOVATION CANNOT BE LEARNED

Myth Debunking

Any firm may build a innovation capability by incorporating lessons learned and good practices in innovation processes

MYTH

INNOVATION MEANS NEW PRODUCTS OR TECHNOLOGIES

Myth Debunking

Innovation is beyond new or existing products: frequently the main value captured is at the business model level and search of the future demand

MYTH

INNOVATION IS R&D'S RESPONSIBILITY

Myth Debunking

Although a R&D competency is important for value extraction, many innovative ideas arise around different business units, with culture playing a critical role

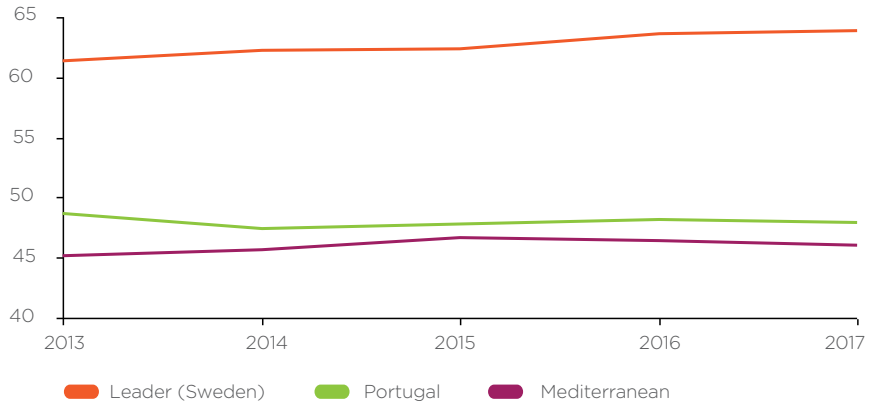
2.

CURRENT STATE OF INNOVATION IN PORTUGAL

Portugal needs a new approach to innovation in order to reduce its innovation gap

Global Innovation Index (GII)

The Global Innovation Index (points from 1 to 100), 2013-2017

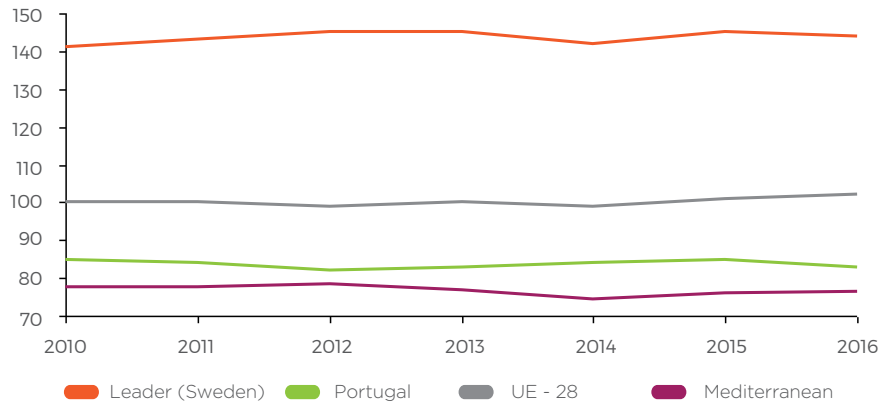


Study published by Cornell University, INSEAD and World Intellectual Property Organization

Portugal is the 31st most innovative country in the world, below the Mediterranean countries

European Innovation Scoreboard (EIS)

European Innovation Scoreboard (pontos de 1 a 180), 2010-2016



Study published by the European Commission

The European Innovation Scoreboard categorizes countries into four distinct groups based on their level of innovation: leader, strong, moderate and modest innovators

Portugal is considered a “moderate innovator”, meaning a performance below the European average, despite above the Mediterranean countries

Portugal has maintained its relative position in the innovation benchmark rankings, which assess mostly supply side push elements and less on demand side pull components

Portugal's main challenges are mostly innovation-specific and not context related

FACTOR	DIMENSION	DESCRIPTION	GII [1]	EIS [2]
Indirect factors	Political environment	Stability and quality of the government in action and if political conditions enable the innovation flourishing	Positive	Positive
	Economic environment	Macroeconomic conditions help to promote innovation	Positive	Positive
	Regulatory environment	Ability of a government to formulate and implement coherent policies that promote the development of the private sector	Positive	Positive
Direct factors	Human capital qualifications	Human resources qualification	Negative	Negative
	Infrastructures	Quality of the information and communication technologies infrastructure available	Neutral	Neutral
	Investment	Investment in R&D and innovation	Negative	Negative
	Collaboration	Collaboration level between companies, government, universities and technology centers	Negative	Negative
	Market sophistication	Level of technological maturity of the market based on tech-related activities developed	Negative	Negative
Outputs	Innovative activities	Measurement of innovation activities that derive from innovation inputs	Neutral	Neutral
	Knowledge	Assessment of the economic impact and knowledge generated by innovation	Negative	Negative
	Creative outputs	Results and creative outputs generated from current innovation to understand the economic impact managed by innovation	Neutral	Neutral

Notes
[1] Global Innovation Index;
[2] European Innovation Scoreboard

Positive Impact
Negative Impact
Neutral Impact

The critical points to address are known and highlight the need to strengthen demand pull elements

FACTORS	CRITICAL DIMENSIONS FOR PORTUGAL	DESCRIPTION
Direct factors	Human capital qualifications	› Low level of human capital qualification › Few qualified human resources allocated to innovation activities in companies and technology diffusion centers › Difficulty in retaining qualified human capital
	Investment	› Low level of public and private investment in innovation › Reduced weight of private investment in innovation › Focus areas of investment in innovation are of small added value › Financing of innovation highly dependent on government
	Collaboration	› Reduced collaboration between companies › Reduced level of collaboration between companies and universities and technology centers
	Market sophistication	› Little employment in knowledge-intensive activities and technological services › Low digital maturity of employees
Outputs	Knowledge	› Reduced number of international patent applications with market value that can be reflected in the balance sheet

3.

LESSONS LEARNT FROM CASE STUDIES

There are five core themes to address the innovation challenges identified



Alignment between corporate strategy and innovation strategy

Structure an innovation capability in line with the company's corporate strategy, ensuring that innovation is a catalyst for the business plan



Organizational Model

Define the type innovation and enablers to better ensure the defined vision for innovation, while promoting a culture of innovation across all business areas



External Relationship

Develop a sustainable relationship with all relevant external stakeholders e.g., customers, universities and technology centers, suppliers, competition, ...)



Business Ambidextrality[1]

Ensure the ability to balance a frequent exercise of identifying lessons learned while preparing for the future



Innovation Management

Manage innovation programs through various support tools, ensuring different time horizons and distinct innovation practices to be managed

Note

[1] this concept refers to companies' ability to encompass two different types of business (i) focus on exploiting existing capabilities for profit and (ii) focus on investigating new growth opportunities. These two methodologies need different strategies, structures, processes and cultures

The companies considered in case studies were grouped based on the maturity of their innovation processes

	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Allocation Criteria	The latest innovation scoring performed by the company is between [400; 550]	The latest innovation scoring performed by the company is between [551; 700]	The latest innovation scoring performed by the company is above 700
Descriptive	Companies that have an installed and structured innovation capabilitybut still at an initial state	Companies that present a mature innovation capability but still with reduced results	Companies with a high maturity degree of innovation and continuous results
Number of Companies Interviewed	5 companies	5 companies	5 companies

There is no correlation between the turnover growth rate and the maturity of the innovation capability, which reflects the challenge of capitalizing innovation into tangible results

The main topics of innovation challenges have different innovation maturity profiles

MATURITY DEGREE HEAT MAP

THEME	TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP	CONSIDERATIONS
Alignment between corporate strategy and innovation strategy	Top management engagement	Low	Average	High	› Clear difference in the level of alignment between corporate strategy and innovation strategy per maturity of innovation capability
	Innovation budget	Low	Average	High	
Organizational model	Innovation type	Average	High	High	› After an initial level, there are no difference of organizational model according to the maturity of the innovation capability
	Innovation enablers	Low	High	High	
External relationship	Competition and others	Low	Average	Average	› Relationship with the competitors is one of the topics which the advanced group do not have a high maturity › Different levels of maturity in the relationship with customer and universities
	Universities and technology centers	Low	Average	High	
	Customer relationship	Low	Average	High	
Business ambidextrality	Lessons learnt	Average	Average	Average	› None of the groups reachesa high level of maturity in the lessons learnt
	Multiple time horizons	Low	Average	High	
Innovation management	Planning and management	Average	Average	High	› The financial return of innovation projects is a clear challenge regardless of the maturity of innovation competencies
	Tools	Average	High	High	
	Project returns	Low	Low	Average	

MATURITY DEGREE

Low Average High



The innovation strategy is still often defined as an isolated process

TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Top management engagement	Although innovation is an independent process within the company, there is some concern regarding the integration with corporate strategy, mainly through: › Dedicated teams › Investment in innovation projects	There is a preliminary prioritization of innovation projects, with some concern that innovation is in line with the company's business priorities	There is a clear vision of the innovation purpose and how it fits into the company's strategy. Top management is regularly involved in decision-making regarding innovation projects.
Innovation budget	The innovation budget is not aligned with the overall company budget	The innovation budget is initially defined without taking into account its specific needs	The innovation budget is defined based on planned and ongoing innovation projects, e.g. there is a clear notion of expected value for innovation

It is critical to embed an innovation mindset into the workforce

TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Innovation Type	Innovation is mostly of the renovation (incremental) type	Balance between renovation and transformative (disruptive) innovation, reflecting concerns on simultaneously improve existing products and services and look for new business models	
Innovation enablers	There are forums responsible for identifying, evaluating and deciding on innovation ideas	Mature use of innovation enablers through: › Innovation forums › Dedicated hour grants › Idea contests › Support for research / technological centers	Main innovation enablers identified: › Innovation Labs › Incentive to patents registration The creation phase includes the identification of third parties support Concern about know-how protection in the creation phase

Identifying mechanisms of constant relationship between companies and customers is a priority

TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Competition and others	There is a basic understanding on the level of innovation practiced by national and international competition, but not mapped on a permanent basis Partnerships are established with other companies, but this is not a common practice	There is a good understanding of the maturity of innovation practiced by national and international competition Often, there is a junction of teams from different companies to share knowledge	
Universities and technology centers	Exist partnerships with universities, but it is not a common practice	There are cases of collaboration with universities through professional internships, master's degrees and other research programs	There are cases of collaboration with universities and technology centers to incorporate scientific knowledge and incentivize employee training
Customer relationship	The relationship with the client is nurtured with satisfaction and opinion questionnaires	The client is involved at an embryonic testing phase of innovation projects through co-creation workshops. This involvement allows to identify changes in clients' needs and facilitate their incorporation into the final offer	In addition to the embryonic phase, the customer is also involved in the remaining phases of the innovation funnel e.g., prototyping

The prioritization of efforts on long-term projects is a challenge

TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Lessons learned	Companies systematically incorporate lessons learnt throughout their innovation process into future projects, reflecting a basic implementation of the concept of ambidexterity		
Multiple time horizons	The priority of innovation teams is the current business, being allocated to innovation projects when necessary The time horizon of most projects is short to medium term	The teams allocated to innovation projects are relatively structured, mainly with a multi-functional perspective Long-term projects are not a priority	Innovation teams are segregated by time horizon e.g., there is a specific team for projects focused on the current business and another focused on long-term projects development

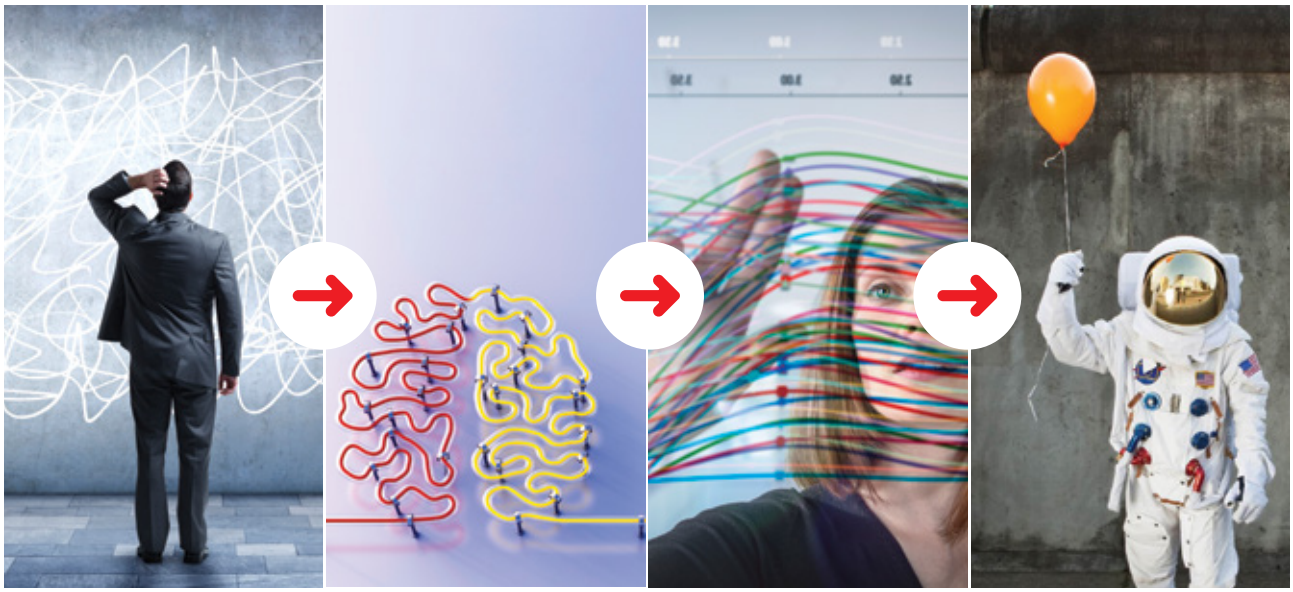
It is key to develop a portfolio-focused vision of innovation projects

TOPIC	INITIAL GROUP	INTERMEDIATE GROUP	ADVANCED GROUP
Planning and management	Innovation projects are managed in isolation, meaning project by project Teams of innovation projects are formed as needed, without any prioritization or prior planning There are small scale R&D and Innovation projects		Innovation projects are managed in isolation, e.g., project by project The prioritization of the projects is carried out through the innovation funnel The scale and number of R&D and innovation projects reflects a culture of sustained innovation
Tools	Non-priority tools for project management are applied, e.g. Microsoft Excel	Priority project management and planning tools are in-place	
Project returns	The calculation of projects return is carried out ad-hoc and the return and risk assessment of the projects is not taken into account in the planning, there are no metrics or methodologies applied in a systematic way		There are metrics and methodologies defined to estimate project returns, but the risk is not taken into account in the planning

4.

RECOMMENDATIONS FOR A SUSTAINABLE INNOVATION

We developed a roadmap with recommendations to sustainably activate innovation capabilities



A.
Corporate and innovation strategy alignment

B.
Ambidextrous vision to innovation

C.
Organizational model

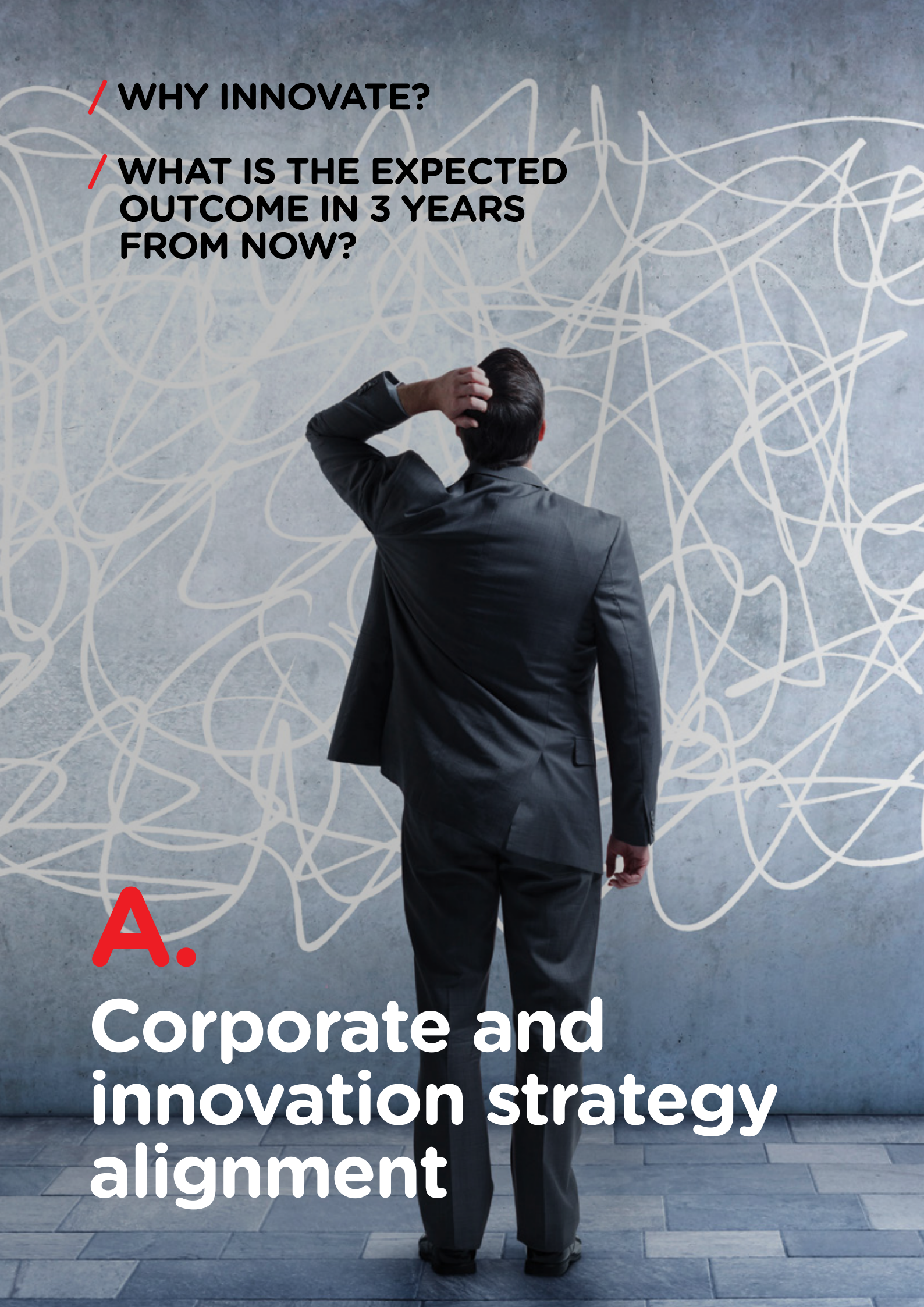
D.
Organizational model components



E.
Cultural transformation

/ WHY INNOVATE?

/ WHAT IS THE EXPECTED OUTCOME IN 3 YEARS FROM NOW?



A.

Corporate and innovation strategy alignment

Aligning the corporate strategy with innovation focus areas and define tangible innovation objectives is critical



Understand

Understand the corporate strategic objectives and level of achievement, as well as the target innovation process.

› Gather insight on current business through interviews and workshops with internal stakeholders

› Identify changes in customer needs and new relevant business trends

› Align expectations through every business area



Define

Identify key focus areas and define innovation challenges based on business needs

› Execute co-creation initiatives to drive idea generation

› Align the guiding principles of the vision to innovation

› Explore customer opportunities and business gaps



Embed

Ensure that the alignment between corporate and innovation strategy is enforced through the innovation process

› Develop an high-level prioritization and the resulting activation program

› Embed recommendations on the organization through workshops with internal stakeholders



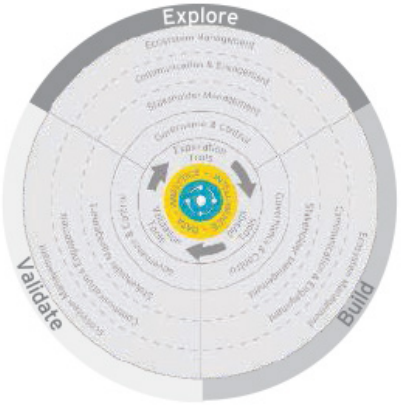
B.

How to structure innovation on an organization?

Implementing the following three steps allows for embedding an ambidextrous vision

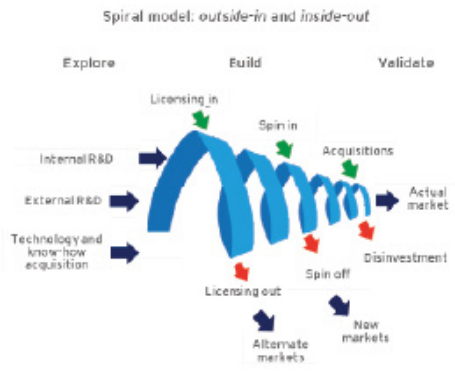
1.
Key internal capabilities

Analyzing the key internal capabilities is critical to identify bottlenecks and define focus investment areas to capacitate innovation



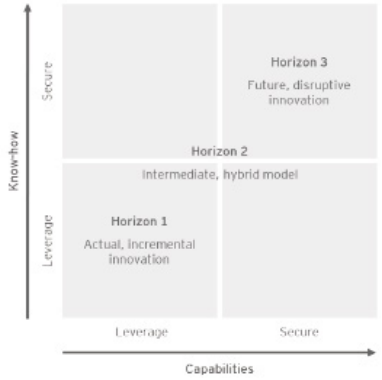
2.
External innovation ecosystem

Identifying external partners to collaborate with requires a detailed and comprehensive analysis of the external innovation ecosystem



3.
Focus on an horizon

Focusing on a time horizon results from aligning internal capabilities and opening the organization outside, balancing leveraging and acquisition capabilities and knowledge



Analyzing internal capabilities defines focus areas to capacitate an innovation practice



1.

Key Internal Capabilities

Companies should identify their key capabilities in each step of the innovation process in order to identify bottlenecks and investment focus areas:

› Mapping innovation operations in each step of the process (e.g., explore, build and validate)

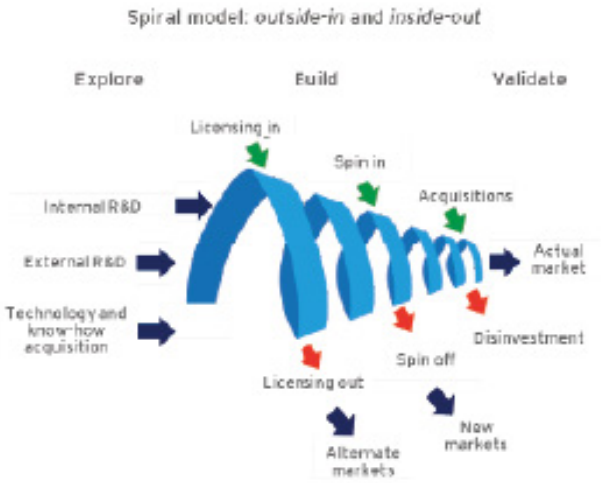
› Innovation capabilities benchmark vs. Best in class (gap analysis) to identify opportunities

› Understanding organizational structure to the innovation process (e.g., how does the current company structure drive innovation)

› Plan and execute workshops between top management and innovation champions to promote employee engagement for innovation

Identifying key internal capabilities may also allow the identification of organizational areas with high potential in participating on the innovation process beyond R&D, and extract value from internal know-how dispersed on these business units

Knowing the external innovation ecosystem is key to integrate external know-how with internal capabilities



2.
External Innovation Ecosystem

The application of an open innovation model allows for companies to share ideas and technology with their external ecosystem (actual and future players)

As a critical condition to embed ambidextrality, the successful implementation of an open innovation model requires:

› Mapping the innovation ecosystem

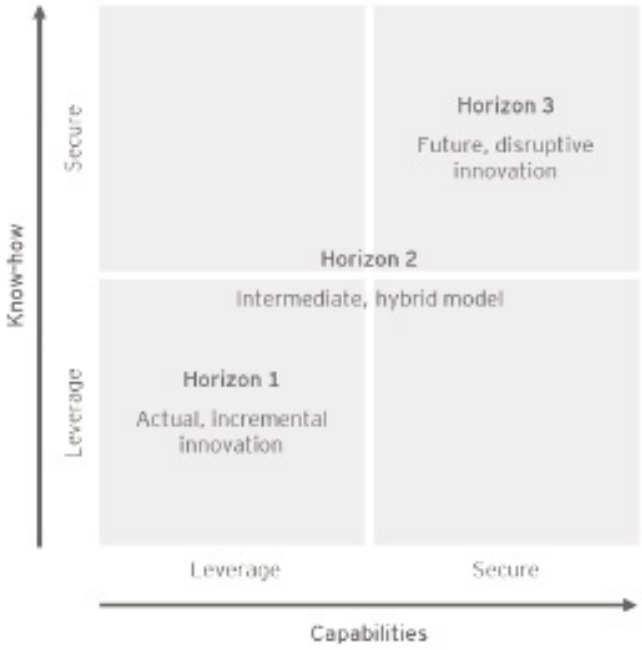
› Identify unexplored collaboration opportunities with existing players

› Identify new players and unexplored relevant trends

› Define engagement level with actual and future players

An effective relationship with the innovation ecosystem allows for releasing the hidden balance of innovation, and combine undervalued internal know-how with new know-how and external technology to identify and address innovation challenges

Both the innovation objectives and the resulting roadmap are based on an ambidextrous vision



3.

Focus On An Horizon

After analyzing the key innovation internal capabilities and external collaboration, it is possible to develop initiatives to meet the innovation objectives:

› Define focus and level of investment based on the internal capabilities analysis (e.g., governance, stakeholder management, communication, ecosystem management)

› Map strategic innovation opportunities identified on the three horizons and define which one to focus on

› Develop a detailed action plan (roadmap) and identify quick-wins

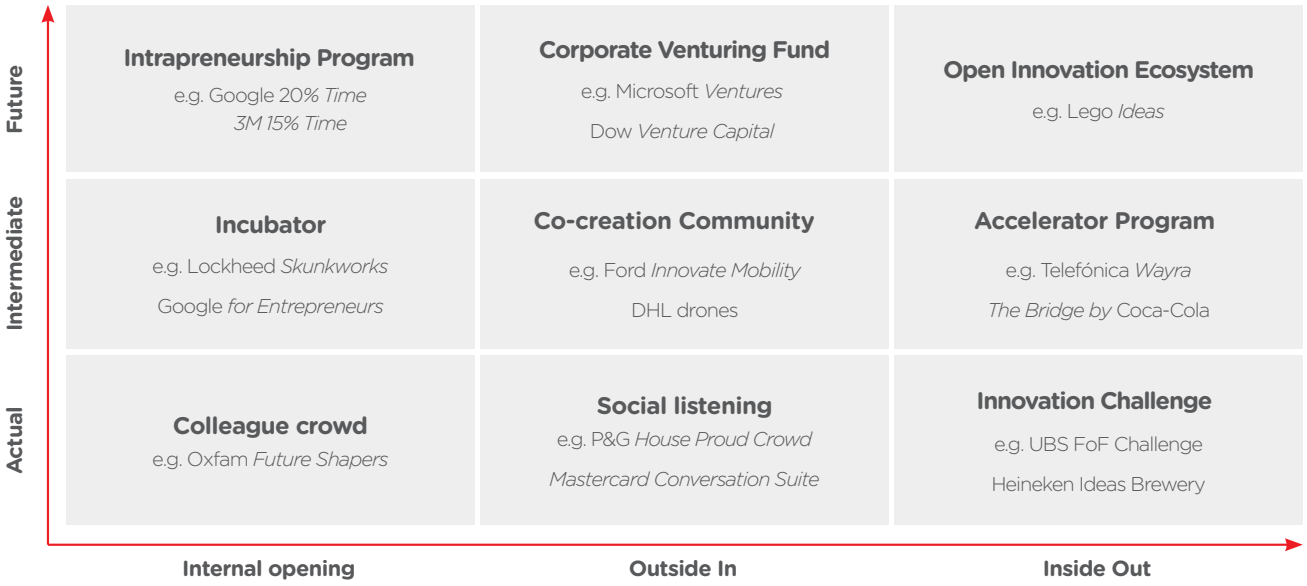
The decision to focus on a specific horizon results from two decisions: to leverage or to secure knowledge and capabilities, This decision should be aligned with the level of outside opening.

/ HOW TO IDENTIFY AND SELECT THE RIGHT COLLABORATION PARTNERS?



C. Organizational Model

The level of outside opening and innovation maturity are inputs to the organizational model



Level of opening

Internal opening
Promote collaboration and knowledge sharing through the organization

Outside in
Gather knowledge from the ecosystem to address challenges and develop capabilities

Inside out
Share knowledge with the ecosystem to anticipate challenges and create opportunities

Level of innovation maturity

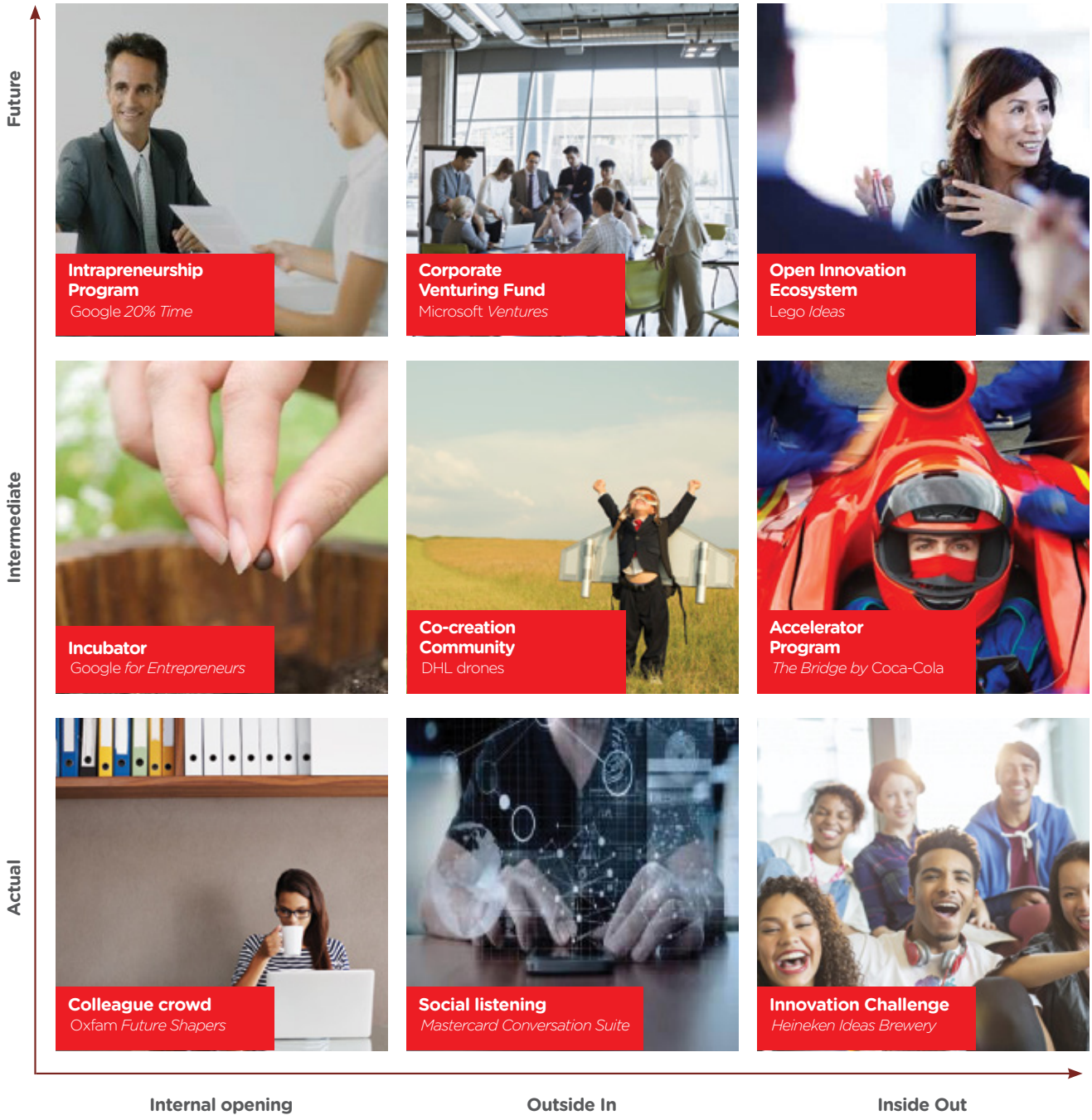
Actual
Incorporate learnt lessons on innovation to develop business plans with clear return potential

Intermediate
Collaborate with the ecosystem to develop ideas and test solution prototypes

Future
Actively collaborate with stakeholders, identify and address unknown needs

The organizational innovation model shapes how the transition to the future is executed. Because this transition is complex and demanding, it must be compatible with the critical organization pace and its cultural transformation

Examples of enablers of innovation organizational model



/ HOW TO CONFIGURE AND EFFICIENTLY MANAGE THE RIGHT INNOVATION PROGRAMS?



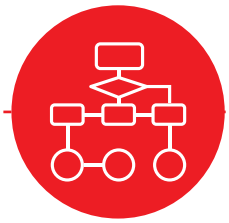
D. Organizational model components

The organizational model is based on four key supporting blocks



1. Structure

Adapt the organization structure to the innovation culture and relationship with the external ecosystem



2. Processes

Agile execution processes and procedures supporting the external innovation



4. Tools

Create supporting conditions to implement a structured innovation practice



3. Governance

Capacitate employee capabilities and ecosystem interaction

There are some tools that capacitate employee capabilities to innovation

Example

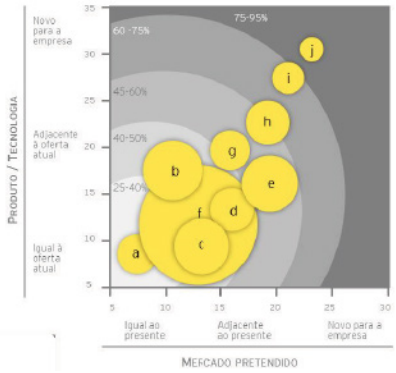


1.
Real-Win-Worthit (RWW)

› Analyze fail hypothesis and potential risks

› Identify and support critical problem solving

Example

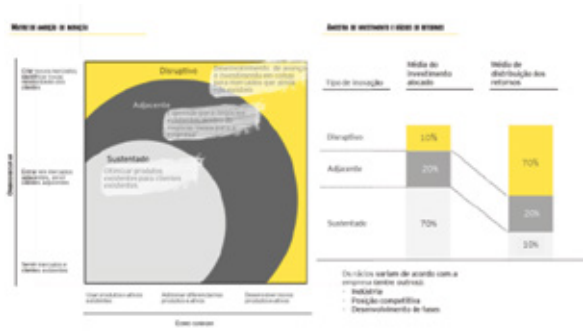


2.
Risk assessment and innovation portfolio matrix

› Estimate the project success probability

› Create a visual platform for discussing the innovation portfolio diversity

Example



3.
Innovation ambition matrix

› Project categorization by ambition level

› Promote discussion on the innovation ambition level

Example

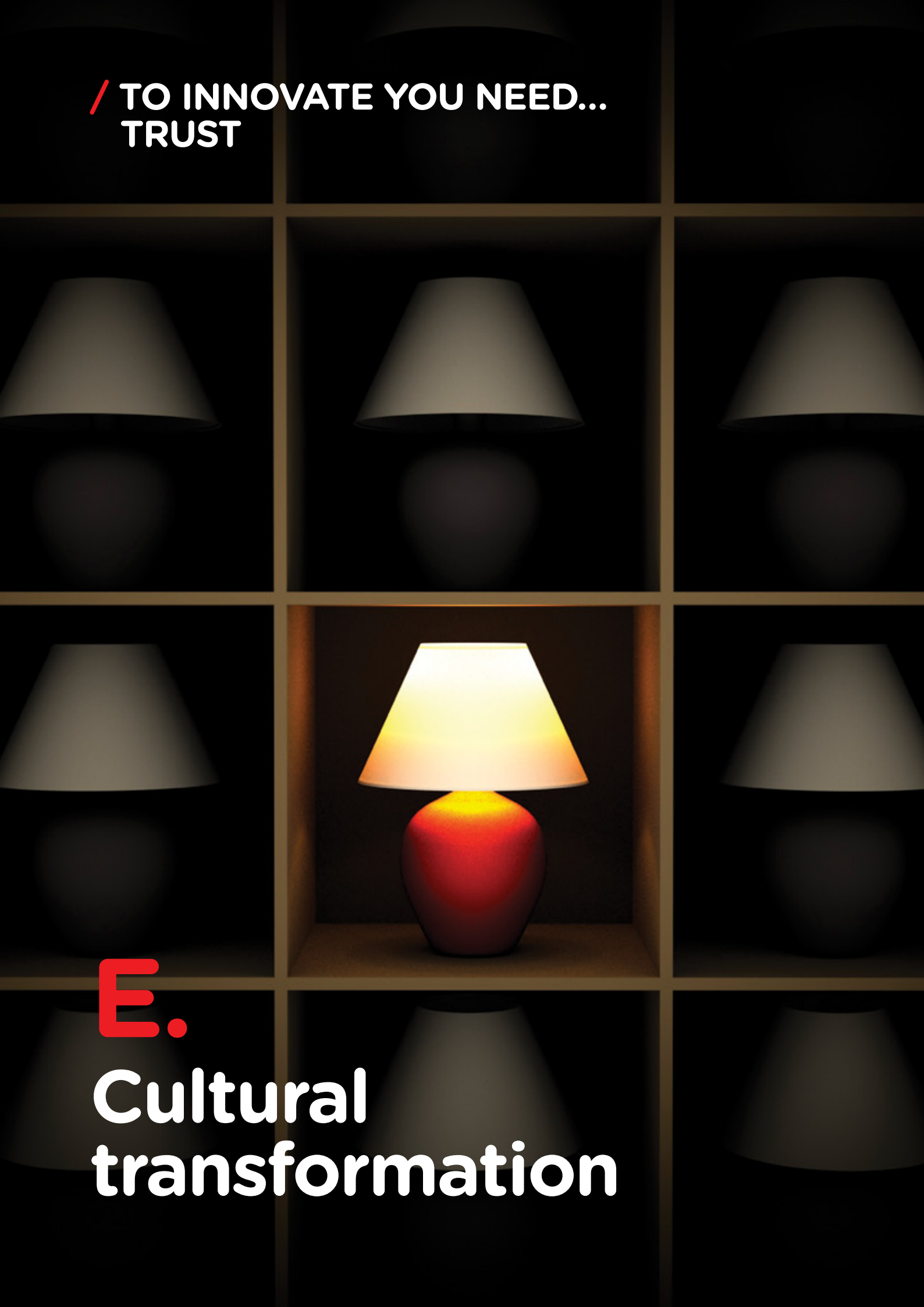


4.
Innovation value chain assessment matrix

› Build end-to-end vision for innovation

› Allow the identification of focus areas on the innovation value chain

/ TO INNOVATE YOU NEED...
TRUST



E.
Cultural transformation

Cultural transformation is critical to implement an innovation-driven mindset

Key axis for the implementation of an innovation-driven mindset on an employee level



Aligning the top management for an innovation culture will allow the organization to share a common set of principles and values, being this the first step for cultural transformation.

Cultural transformation should begin on a leadership level: an innovation culture intrinsically implemented on the organization results on the presence of leadership even when it is not there, and on the team and individual empowerment.

Even though culture transformation begins at the leadership level, to extend it to the rests of the organization is critical to develop the following employee skills:

Colaboration

Promote collaboration between interdisciplinary teams to break information silos.

Creativity

Incorporate creativity on each team's daily routines to identify improvement opportunities.

Autonomy

Promote the capability of identifying the concrete execution opportunities of the generated ideas.

Communication

Promote frequent communication and open dialog on ideas, risks and opportunities.

A cultural transformation focused on innovation is a complex and critical process

For an effective cultural transformation, leadership should define a common set of values and principles shared by the entireorganization, in its process (e.g. indicators, procedures) and human (e.g. expectations, responsibilities) angles



Visualize

Understand the actual vision for innovation

› Check the alignment between innovation and corporate cultures

› Gather inputs from employees on the established innovation culture

› Visualize the new innovation culture and design an implementation strategy



Redesign

Design the organizational model

› Redesign structure, metrics, incentive models, policies, processes and procedures to align the new innovation culture with the corporate culture

› Develop an implementation and follow-up plan



Communicate

Communicate the new innovation culture in four key areas

› What has changed

› What remains the same

› The process used to drive change

› Individual role and responsibilities

It is key to assess the cultural maturity to know what the pace is of the organizational transformation

Example

DIMENSION OF ANALYSIS	RATING 1 2 3 4 5 6	BEST PRACTICE
Strategic vision		Relationship between daily tasks and corporate strategy
Guiding principles		Clear and consistent principles
Leadership		Leadership alignment and cooperation
Management		Alignment throughall management layers
Talent		Continuous training for employees
Incentives system		Clear and merit-based incentive model
Recognition		Successes are regularly celebrated
Communication		Open and honest collaboration
Collaboration		Collaborationbetween business areas is encouraged

To-be As-is Reality check

Cultural Profiler is a tool to capture and show the employee's perspective on the actual and future state of the organizational culture through a questionnaire. It can be used to meet the following objectives:

› Gather internal inputs for strategic alignment, priority definition and implementation plan

› Create a platform to encourage discussion and engagement

› Show the cultural alignment of the organization on a leadership, regional business areas (reality check)

› Monitor the cultural transformation progress vs. the future state

A new business
Innovation Architecture
for Portugal

COTEC Portugal
Somos Inovação



i4.0 INDÚSTRIA 4.0

Pi4.0 Plataforma Indústria 4.0

COMPETE 2020

PORTUGAL 2020

UNIÃO EUROPEIA
Fundo Europeu
de Desenvolvimento Regional