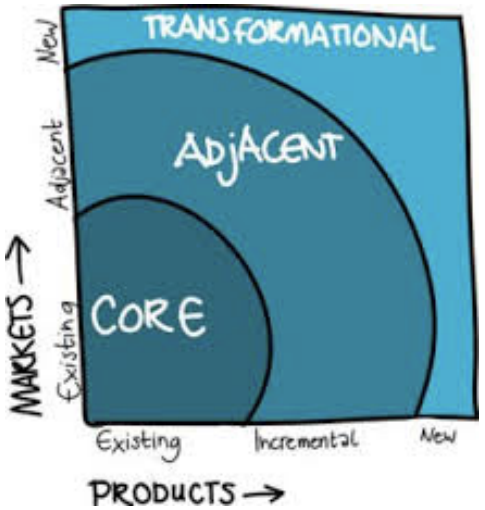
GESTÃO DE PORTFÓLIO DE PROJETOS DE INOVAÇÃO – INOVAÇÃO RADICAL



Vinicius Chagas Brasil

São Paulo, 26 de maio de 2020

LABORATÓRIO DE GESTÃO DA INOVAÇÃO

O LGI – Laboratório de Gestão da Inovação se propõe a avançar no conhecimento e na prática da organização e gestão da inovação nas empresas, bem como contribuir para o aperfeiçoamento e geração de políticas públicas.

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- ✓ **Professor** do curso de **Business Innovation** na **FIAP**
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AGENDA

1 Gestão de Portfólio de Projetos

2 Portfólio e Desenvolvimento de Novos Produtos

3 Portfólio de Inovação e outros Portfólios

4 Visão Prática Geral

5 E a Inovação Radical?

Gestão de Portfólio de Projetos

GESTÃO DE PORTFÓLIO DE PROJETOS

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In This Article

Two Lenses for Research on Portfolio Management
The Micro Lens on Portfolio Management
Portfolio Management Frameworks
The Macro Lens on Portfolio Management
Entry and Exit Timing
Portfolio Breadth and Depth
Portfolio Management Resource Allocation
Portfolio Management,

Product and Innovation Portfolio Management

Vinícius Chagas Brasil and J.P. Eggers

Subject: Business Policy and Strategy, Marketing, Operations Management, Technology and Innovation Management

Online Publication Date: Jan 2019 DOI: 10.1093/acrefore/9780190224851.013.28

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Summary and Keywords

In competitive strategy, firms manage two primary (non-financial) portfolios—the product portfolio and the innovation portfolio. Portfolio management involves resource allocation to balance the important tradeoff of risk reduction and upside maximization, with important decisions around the evaluation, prioritization and selection of products and innovation projects. These two portfolios are interdependent in ways that create reinforcing dynamics—the innovation portfolio is the array of potential future products, while the product portfolio both informs innovation strategy and provides inputs to future innovation efforts. Additionally, portfolio

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”there are two ways to win at new products; doing project right and doing the right project”

Robert Cooper

GESTÃO DE PORTFÓLIO DE PROJETOS

*"Portfolio management is a **dynamic decision process**, whereby a business's list of active new product (and R&D) projects is constantly updated and revised. In this **process**, new projects are **evaluated**, **selected**, and **prioritized**; existing projects may be **accelerated**, **killed**, or **deprioritized**; and **resources are allocated** and reallocated to the active projects. The portfolio decision process is characterized by **uncertain** and **changing information**, **dynamic opportunities**, **multiple goals** and **strategic considerations**, **interdependence among projects**, and **multiple decision-makers** and **locations**."* (Cooper, 1999, p. 335)

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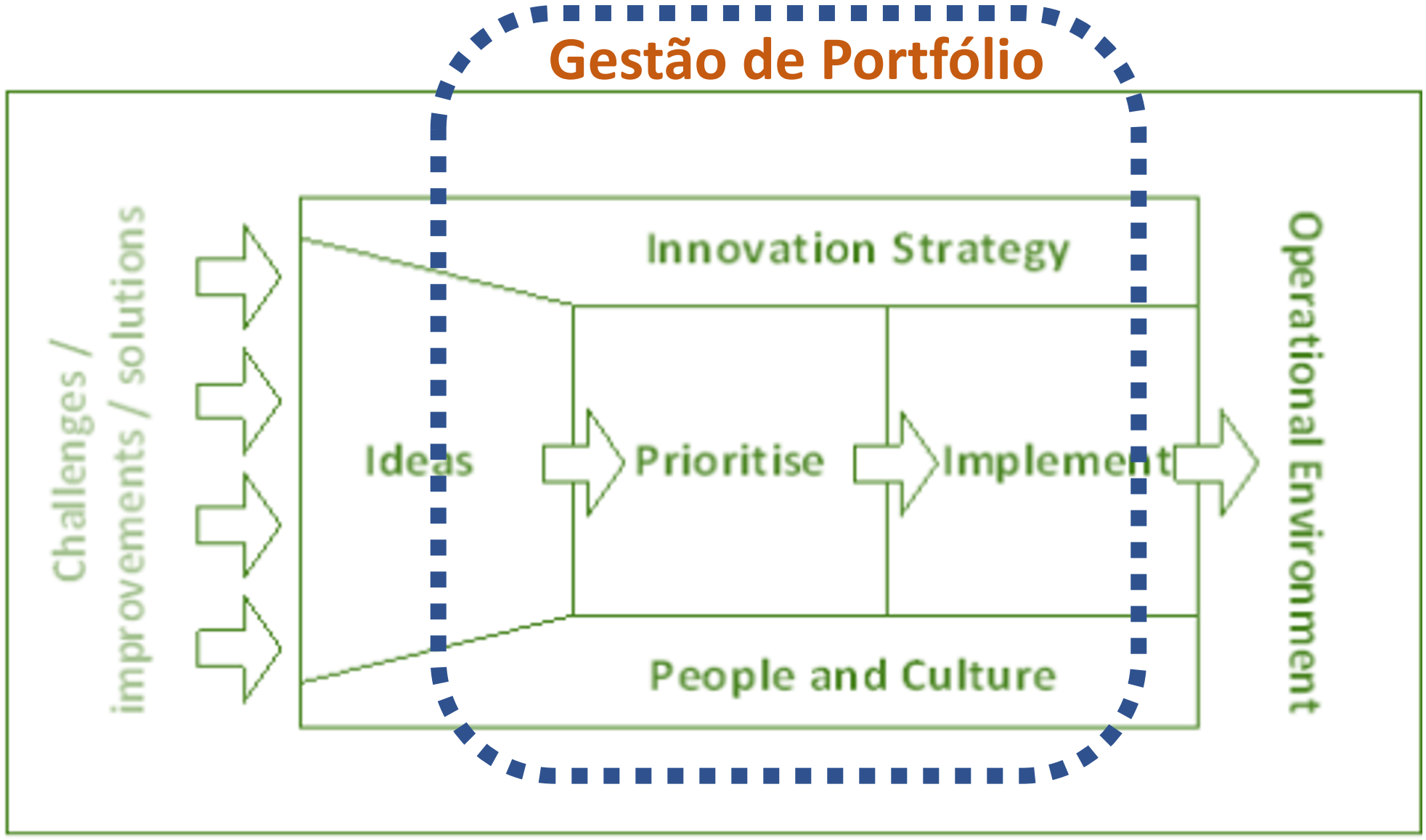

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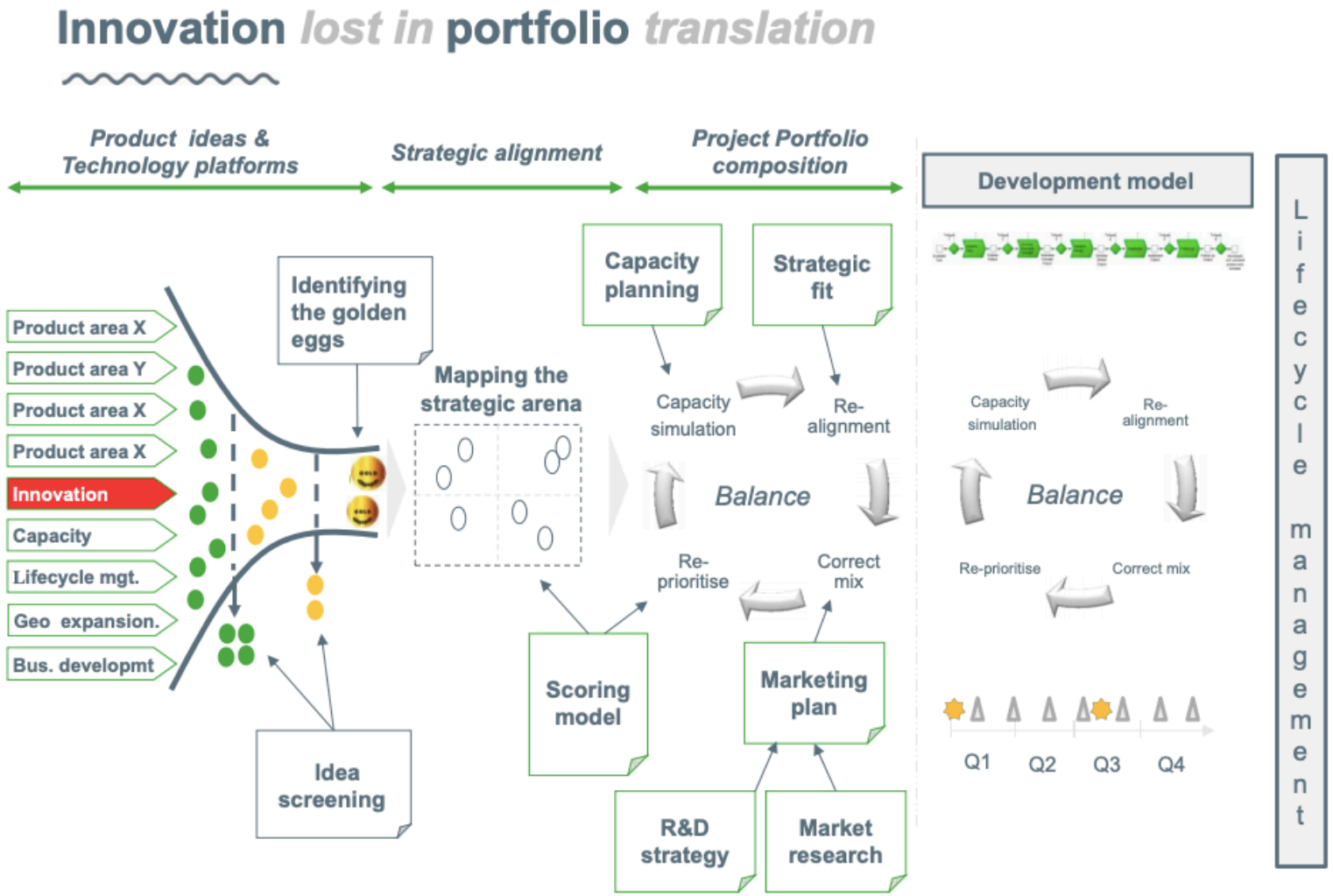

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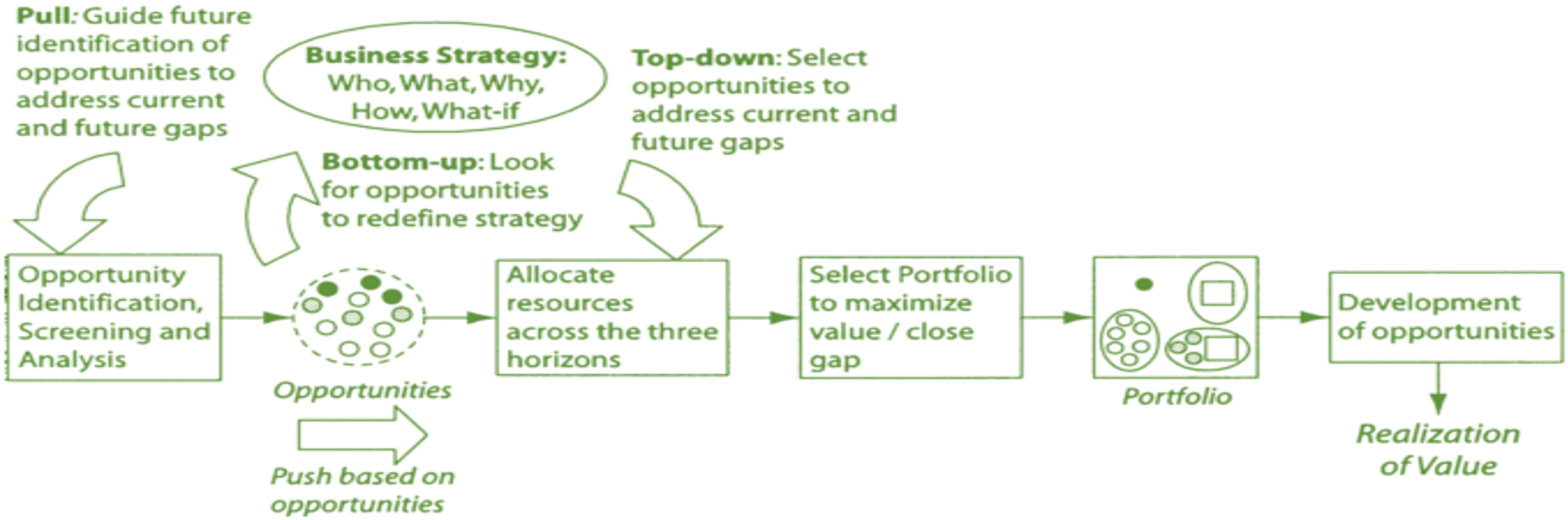


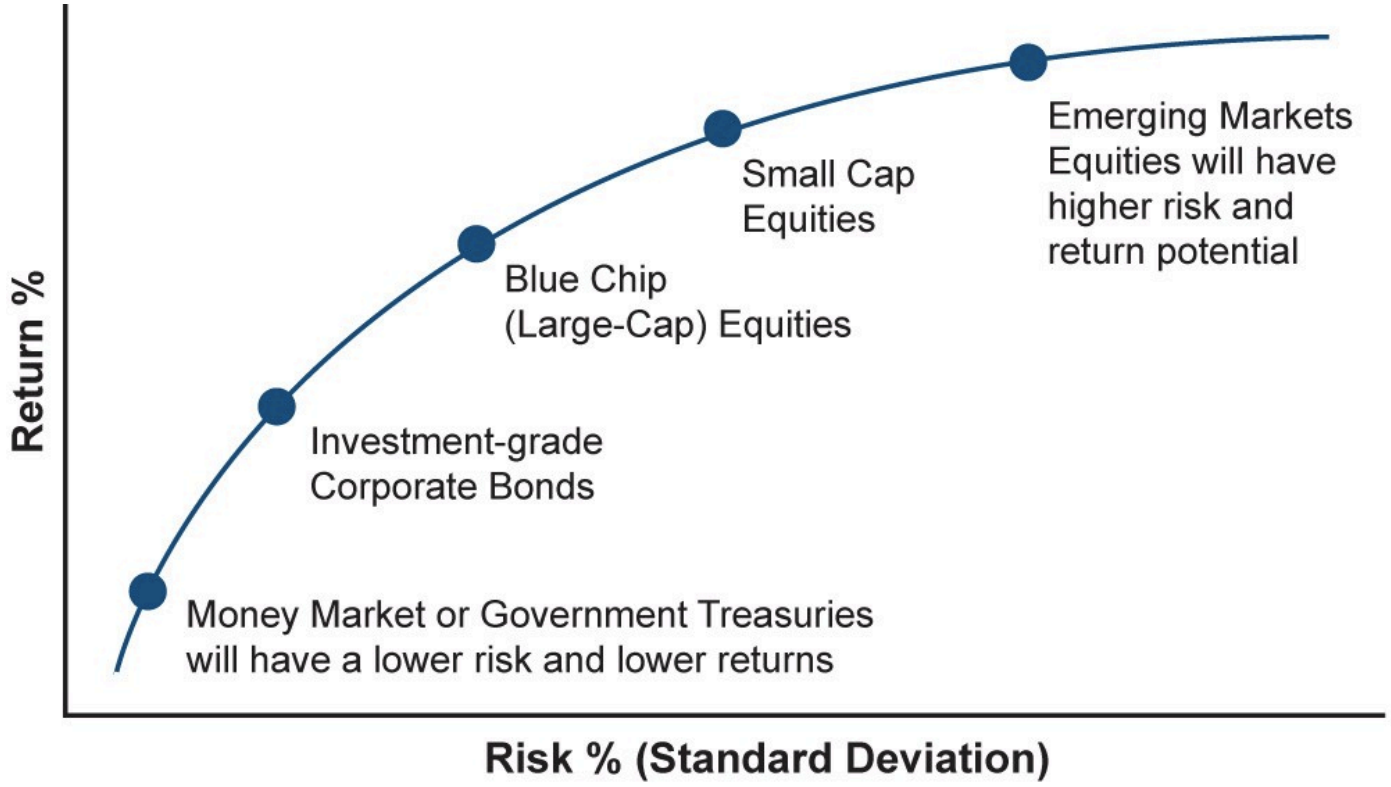
Tools to Identify Current Gaps:	Tools to Support Bottom-up:	Tools to Identify Gaps:	Tools to Select Portfolio and Balance Across Horizons:
- Traffic light - Analysis of technology positions - Analysis of product attributes	- Identify discontinuous change - Create new dimension of merit	- Lifecycle analysis - Robust portfolio / scenario analysis	- Strategic bucket framework - Financial analysis - Close gaps

Fonte: Terwiesch e Ulrich (2008)

GESTÃO DE PORTFÓLIO DE PROJETOS

Origem: *Gestão de portfólio em mercado financeiro*

Carteira ótima, considerando risco e retorno



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Isto influenciou a adaptação para projetos

Strategic Fit

Link e operacionalização da estratégia

Balancing

Tipos, *hedge* (risco), inovação, *tecnologias*

Value maximization

Que gera o *Valuation Problem*

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IMPORTANTE!

Os **processos**, ***frameworks***, **ferramentas**, **modelos de decisão** carregam tais orientadores como **premissas de desenvolvimento**, **critérios de avaliação**, **indicadores de *performance***.

GESTÃO DE PORTFÓLIO DE PROJETOS

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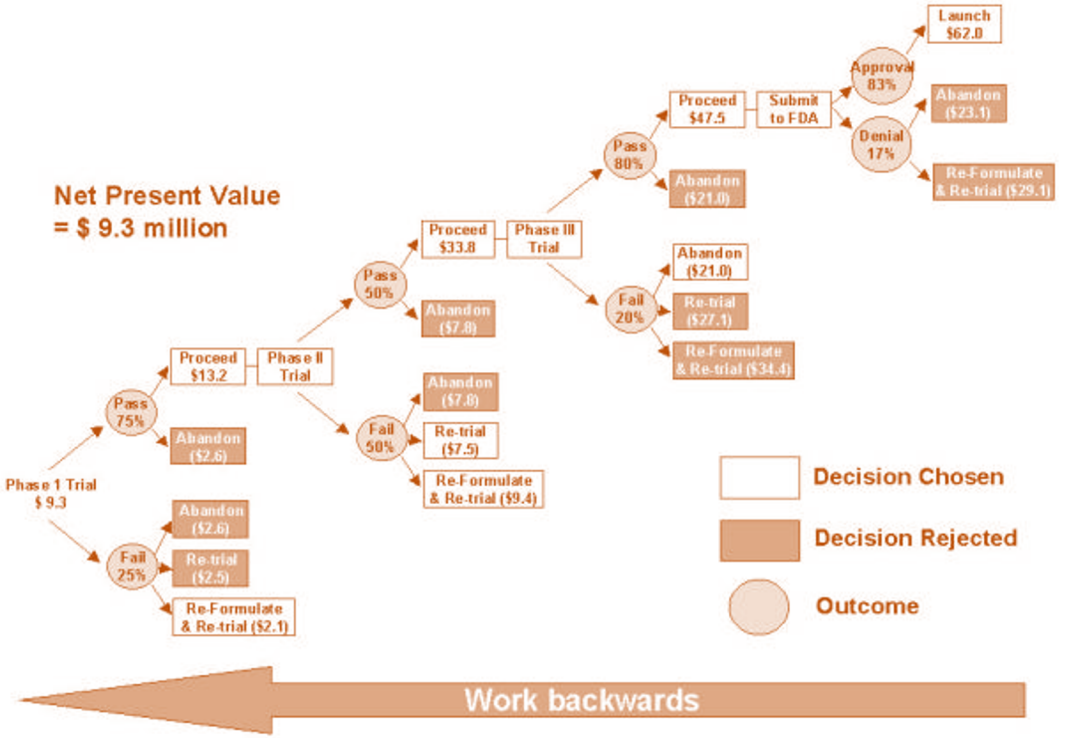
Métodos e ferramentas

$$NPV = -C_0 + \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \ldots + \frac{C_T}{(1+r)^T}$$

$-C_0 = Initial\ Investment$
$C = Cash\ Flow$
$r = Discount\ Ra$
$T = Time$

Métodos financeiros

- VPL
- TIR
- ROI
- Opções Reais
- Árvores de decisão
- ...



GESTÃO DE PORTFÓLIO DE PROJETOS

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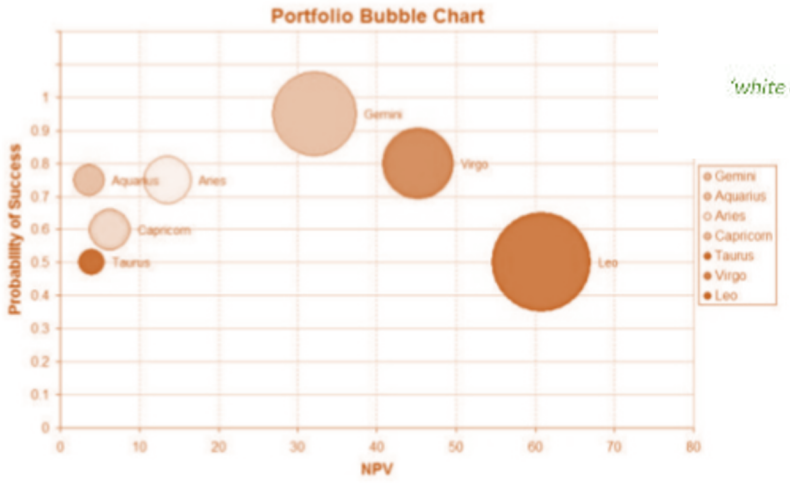
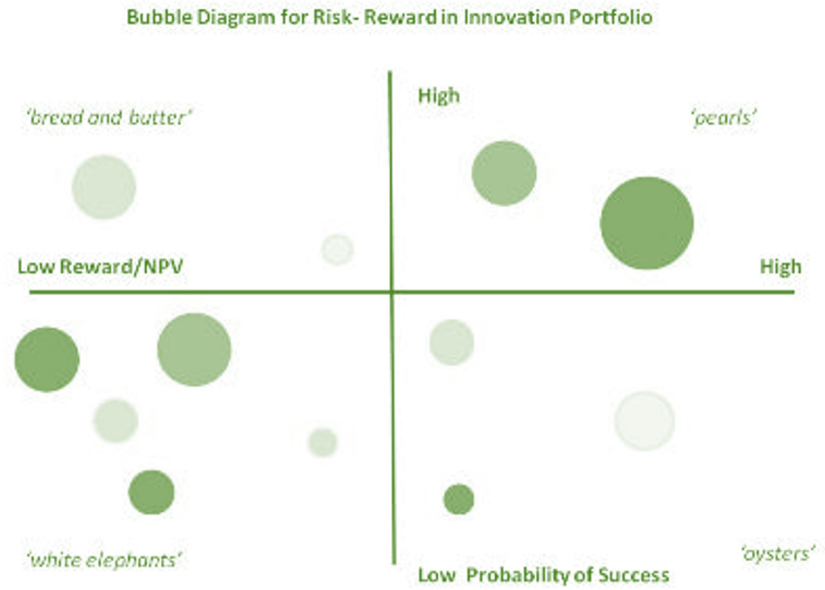
Métodos e ferramentas

Bubble Diagrams

Risk-Reward Diagram



Bubble sizes: annual resources
Y: Probability of success, X: Reward (modest to excellent),
Y: Ease-Difficulty, X Low-High Importance



GESTÃO DE PORTFÓLIO DE PROJETOS

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Métodos e ferramentas

Scoring Models

Checklist Models

Selection Criteria	Points Awarded			Kill?
Joker	91 points			
	1 point	5 points	15 points	
Strategic Fit	**Low** Fits 1 of the criteria	**Medium** Fits 2-3 of the criteria	**High** Fits 4+ of the criteria	Yes, unless a "joker" project
Possible Synergies	**Low** Can't combine sales of proposed product with other product families	**Medium** Can combine sales of proposed product with 1 other product family	**High** Can combine sales of proposed product with 2+ other product family	No
Financial Value	**Minor** 0 < NPV <$1Mil	**Medium** $1Mil < NPV < $5Mil	**Major** NPV > $5Mil	Yes, unless a "joker" project
Technical Complexity	**Very Difficult** A significant external expertise is required.	**Somewhat Difficult** Will need some external expertise	**Easy** Can be implemented by internal employees	No
Market Attractiveness	**Low** Few requests	**Medium** Several requests	**Major** Many requests	Yes, unless a "joker" project
Competition and IP	**High** Many competitors Weak IP protection	**Medium** 3-4 competitors Normal IP protection	**Low** 0-2 competitors Strong IP protection	No

GESTÃO DE PORTFÓLIO DE PROJETOS

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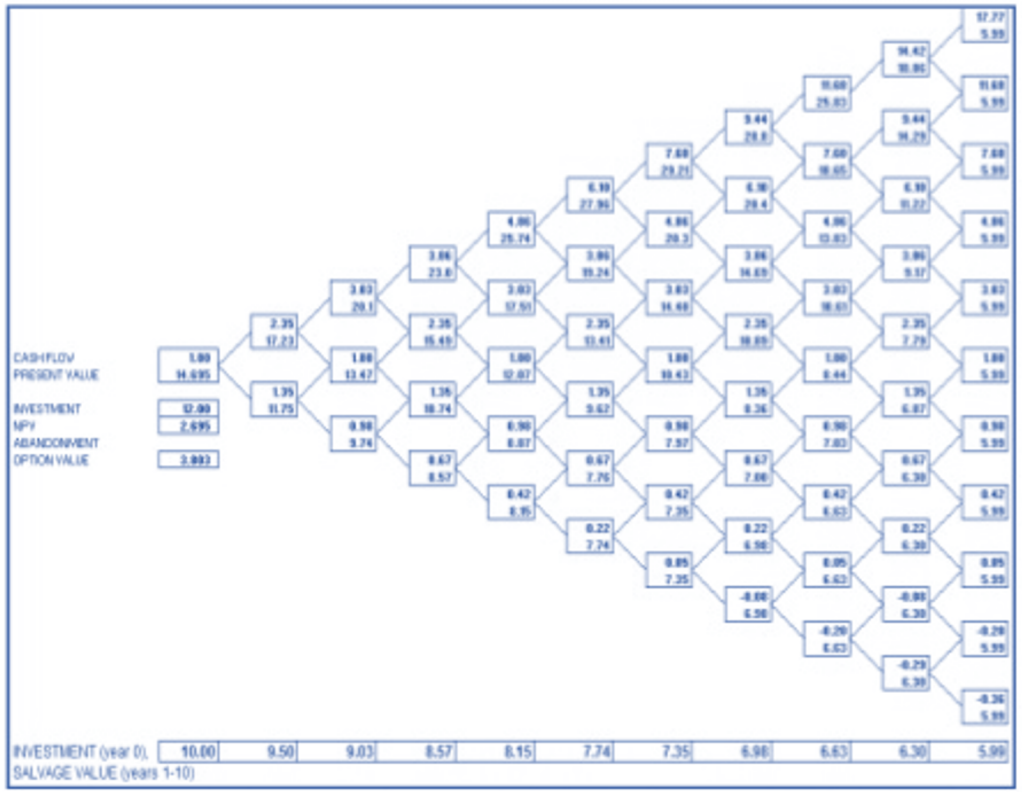
Métodos e ferramentas

Real Options

Example: Real Option Analysis - Binomial Tree Options



- Assumes one of two outcomes occur in each period: upside or downside
- Corrects discount rate imprecision of decision tree (equidistant periods)
- Values options by forming "twin" portfolio from which outcomes can be discounted
- Black-Scholes option pricing formula can be used as check as volatility shifts over time

** *"Corporate Finance: Ch. 22 – Real Options", Brealey, Myers and Allen. P. 606.*

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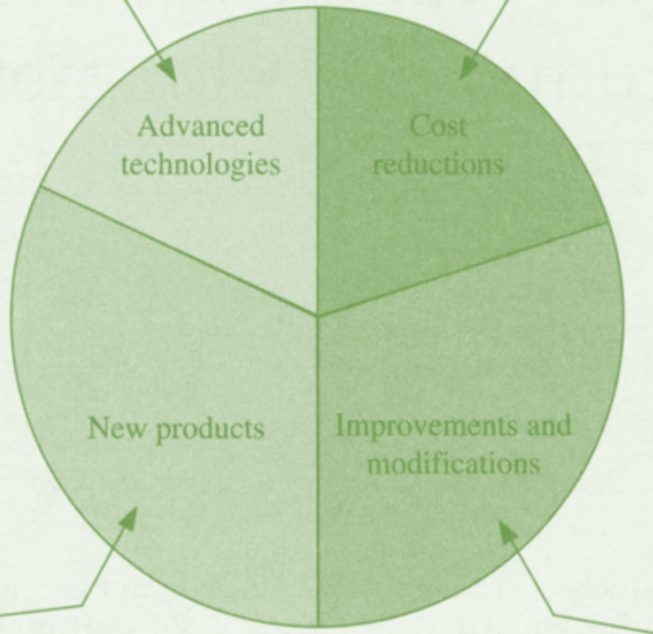
Métodos e ferramentas

Strategic Buckets

Program	Rank	Score
Walden	1	92
Proteus	2	85
Gamma	3	79
Sanaco	4	75

Program	Rank	Score
1267-F	1	89
98-DD	2	85
150-C	3	81
97-D	4	77
0919-K	5	65



Program	Rank	Score
Midget	1	89
Kool-K	2	85
Essy	3	81
Pop-up	4	77
Tri-123	5	65

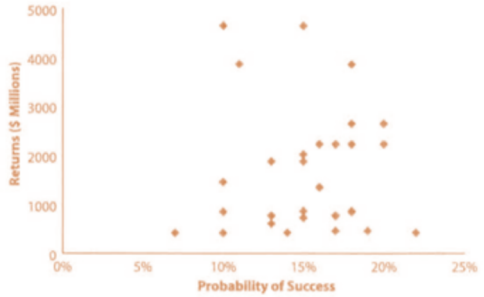
Program	Rank	Score
X-Tra	1	92
NaCl	2	85
GamX	3	79
Mini	4	75

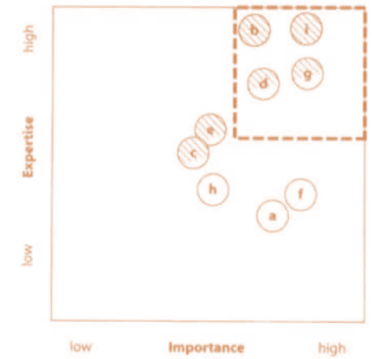
GESTÃO DE PORTFÓLIO DE PROJETOS

Métodos e ferramentas

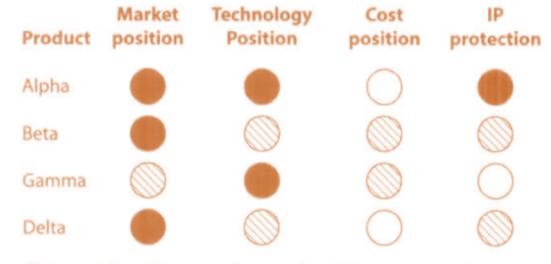
Diversos

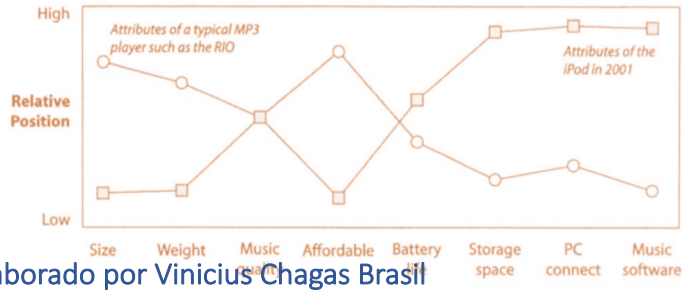
Uncertainties	A: Status Quo	B: Exit out of Nuclear Power	C: Much Higher Energy Prices	D: Increased Competition and Market Entry
	Scenarios			
Electric homes	++	–	o	–
Electricity to industry	++	–	o	–
Natural gas to homes	++	o	–	o
Natural gas to industry	++	o	o	–

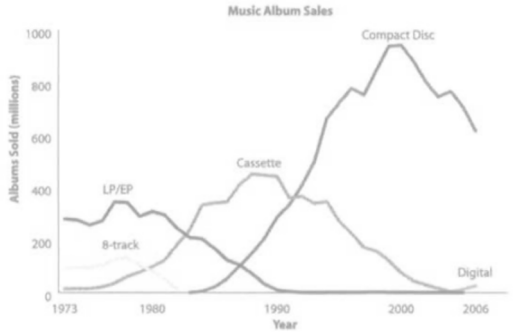




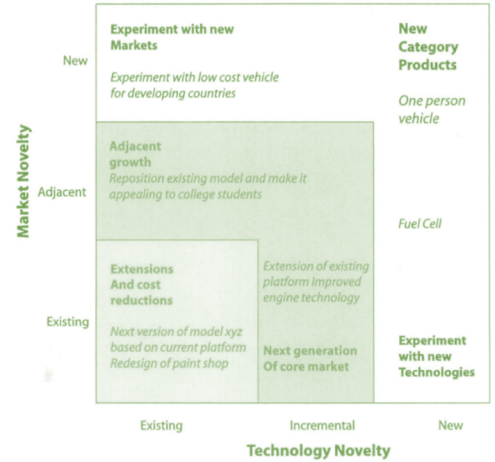
Attribute	8-Inch Drives	5.25-Inch Drives
Target Market	Microcomputer	Desktop PC
Capacity (megabyte)	60	10
Physical volume (cubic inches)	566	150
Weight (pounds)	21	6
Access time (milliseconds)	30	160
Cost per megabyte	$50	$200
Unit cost	$3000	$2000







Uncertainties	A: Status Quo	B: Exit Out of Nuclear Power	C: Much Higher Energy Prices	D: Increased Competition and Market Entry
	Scenarios			
1. Increase in oil prices			X	
2. Political change with environmentalists in the governing coalition		X		
3. Technical problems with a nuclear plant		X		
4. European community requires a separation in ownership between power plants and the power grid				X
5. Open European energy markets				X
6. Renewable energy sources become profitable			X	



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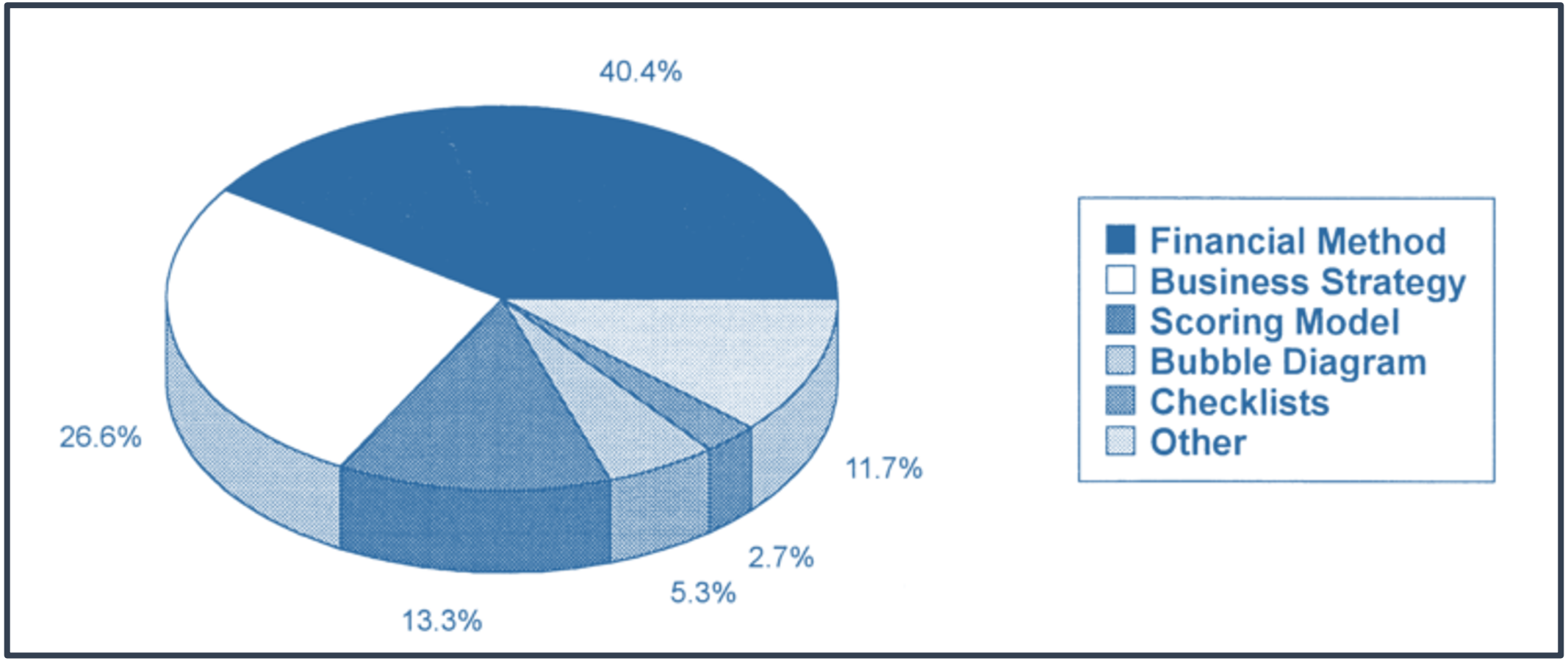
Métodos e ferramentas



Fonte: Cooper (1999)

Elaborado por Vinicius Chagas Brasil

GESTÃO DE PORTFÓLIO DE PROJETOS

Métodos e ferramentas

Gestão de Portfólio: conceitos - Marly Carvalho (11:04)

Gestão de Portfólio: abordagens e ferramentas - Marly Carvalho (19:45)

http://nagi-pro.poli.usp.br/mod/page/view.php?id=76

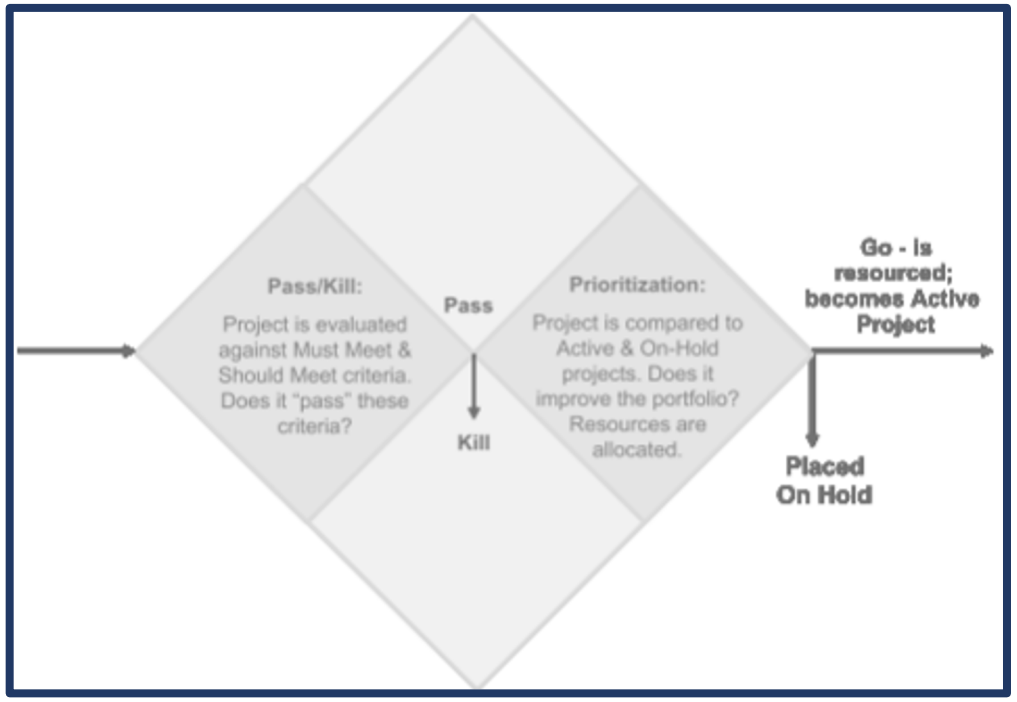
Portfólio e Desenvolvimento de Novos Produtos

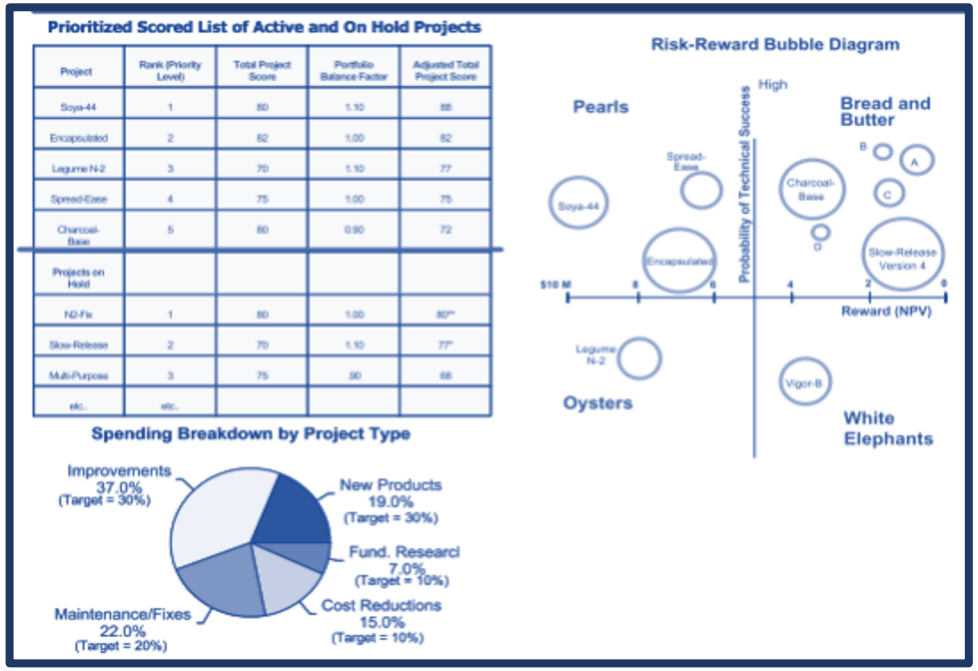
PORTFÓLIO E DESENVOLVIMENTO DE NOVOS PRODUTOS

Comitês

Instância central para o processo de **tomada de decisão**

- ✓ Processo dominado por ***gates***
- ✓ Processo dominado por **portfólio**





Fonte: Cooper (2000)

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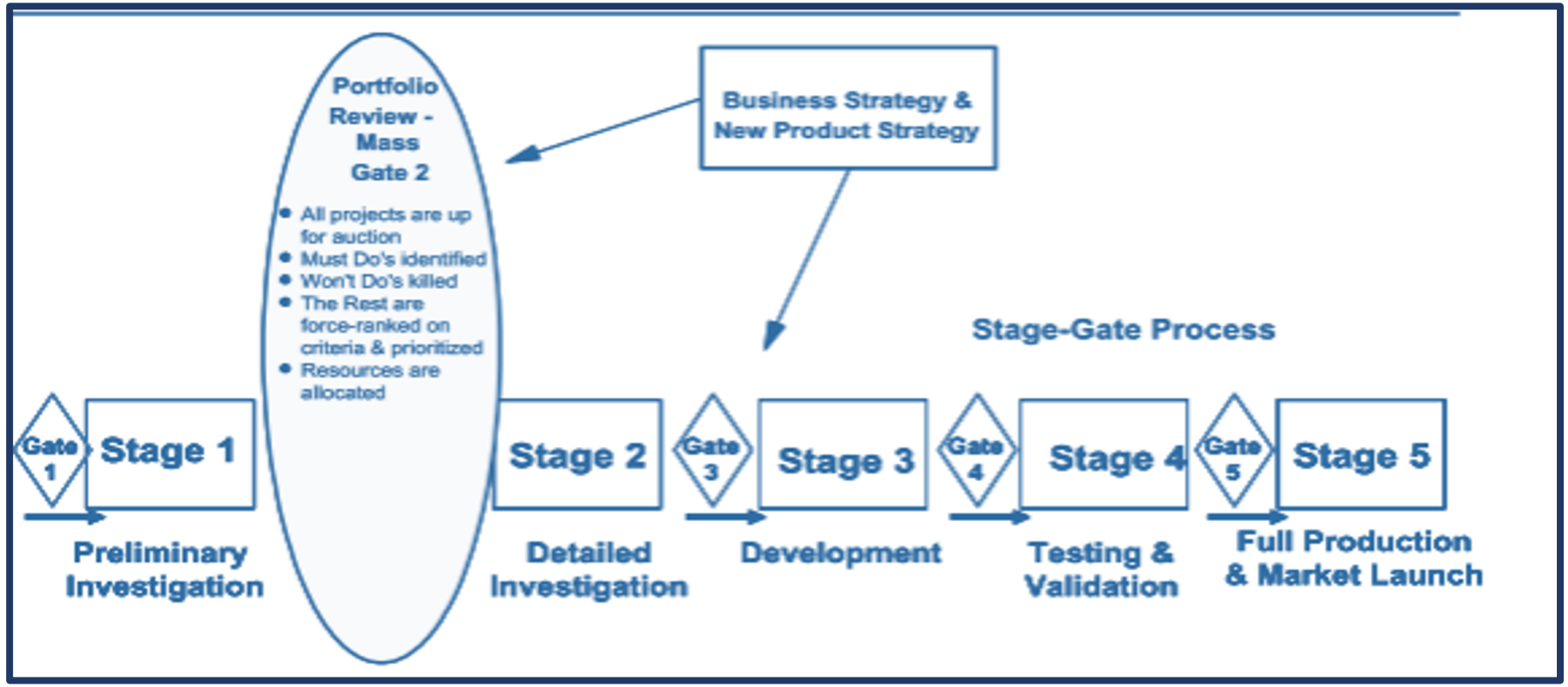
PORTFÓLIO E DESENVOLVIMENTO DE NOVOS PRODUTOS

Comitês



Fonte: Cooper (2000)

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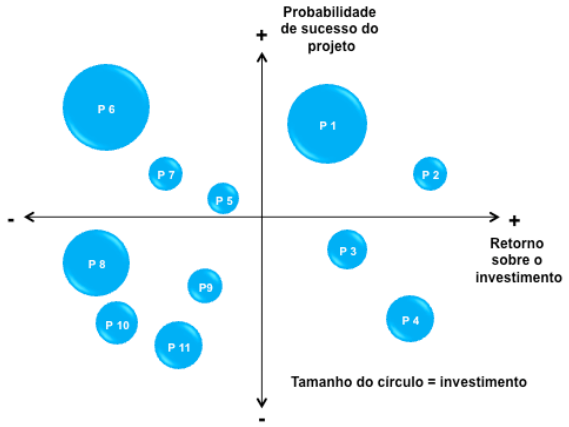
PORTFÓLIO E DESENVOLVIMENTO DE NOVOS PRODUTOS

A gestão do fluxo de inovação se dá em dois momentos complementares: (i) a cada Gate, cada projeto é avaliado individualmente; (ii) periodicamente, um comitê formado por indivíduos com grande poder de decisão é reunido para revisar todo o portfólio do fluxo de inovação

trimestral ou semestral

Represa ⟷ *Projetos on hold* ⟷ **Gestão do Portfólio**

O processo de gestão de portfólio avalia os projetos contra os demais projetos e contra objetivos estratégicos, permitindo criar uma prioridade entre eles e identificar possíveis gaps para o alcance das estratégias



Projetos que passaram na avaliação do gate

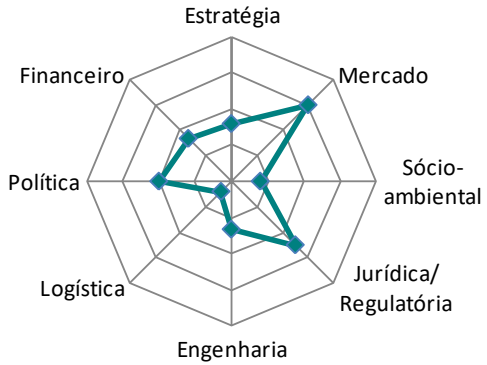
Projetos priorizados

Ideação — G1 — **Escopo** — G2 — **Análise de viabilidade** — G3 — **Desenvol-vimento** — G4 — **Teste e validação** — G5 — **Lançamento**

Ponto de forte comprometimento de recursos

Stage-gate

mensal



Projetos NO GO

O processo de Stage-Gate avalia cada projeto individualmente, em relação ao seu mérito contra determinados critérios

Base de idéias e projetos

Adaptado da apresentação de Jaime Frenkel – ELO Group

PORTFÓLIO E DESENVOLVIMENTO DE NOVOS PRODUTOS

Harvard Business Review
www.hbrreprints.org

HBR SPOTLIGHT

The Innovation Value Chain

Rather than reflexively importing innovation best practices, managers should adopt a tailored, end-to-end approach to generating, converting, and diffusing ideas.

by Morten T. Hansen and Julian Birkinshaw

The Innovation Value Chain: An Integrated Flow

Viewing innovation as an end-to-end process rather than focusing on a part allows you to spot both the weakest and the strongest links.

	IDEA GENERATION			CONVERSION		DIFFUSION
	IN-HOUSE Creation within a unit	CROSS-POLLINATION Collaboration across units	EXTERNAL Collaboration with parties outside the firm	SELECTION Screening and initial funding	DEVELOPMENT Movement from idea to first result	SPREAD Dissemination across the organization
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses, and best practices?	Are we good at diffusing developed ideas across the company?
KEY PERFORMANCE INDICATORS	Number of high-quality ideas generated within a unit.	Number of high-quality ideas generated across units.	Number of high-quality ideas generated from outside the firm.	Percentage of all ideas generated that end up being selected and funded.	Percentage of funded ideas that lead to revenues; number of months to first sale.	Percentage of penetration in desired markets, channels, customer groups; number of months to full diffusion.

PORTFÓLIO E DESENVOLVIMENTO DE NOVOS PRODUTOS

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Technovation 35 (2015) 59–70

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journal homepage: www.elsevier.com/locate/technovation

Innovation processes: Which process for which project?

Mario Sergio Salerno *, Leonardo Augusto de Vasconcelos Gomes, Débora Oliveira da Silva, Raoni Barros Bagno, Simone Lara Teixeira Uchôa Freitas

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Innovation management
Innovation processes
Innovation organization
New product development (NPD)
Contingency approach

ABSTRACT

The innovation process has traditionally been understood as a predefined sequence of phases: idea generation, selection, development, and launch/diffusion/sales. Drawing upon contingency theory, we argue that innovation process may follow a number of different paths. Our research focuses on a clear theoretical and managerial question, i.e., how does a firm organize and plan resource allocation for those innovation processes that do not easily fit into traditional models. This question, in turn, leads to our research question: Which configuration of innovation processes and resource allocation should be employed in a given situation, and what is the rationale behind the choice? Based on a large-scale study analyzing 132 innovation projects in 72 companies, we propose a taxonomy of eight different innovation processes with specific rationales that depend on a project's contingencies.

R&D MANAGEMENT

Models with graphical representation for innovation management: a literature review

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[2]Federal University of Minas Gerais, Engineering School, Production Engineering Department, Technology Center for Quality and Innovation, Av. Pres. Antônio Carlos, 6627, Escola de Engenharia—Pampulha, Belo Horizonte, MG, 31270-901, Brazil. rbagno@dep.ufmg.br
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In the last decades, the management of innovation has achieved increasing importance in both academic and business environments. For the companies, an effective engagement in innovation efforts involves the adoption of management models to guide the definition of organizational processes to conduct innovation opportunities throughout the organization. In this context, graphical representations can strongly communicate the central propositions of each model, accelerating the diffusion and influence of such models in both academic and business environments. Based on an academic database search, and snowball procedure, models were selected considering the unique charac-

Portfólio de Inovação e outros Portfólios

PORTFÓLIO DE INOVAÇÃO E OUTROS PORTFÓLIOS

Portfólio de produtos

PORTFÓLIO DE INOVAÇÃO E OUTROS PORTFÓLIOS

LGI Laboratório de Gestão da Inovação

Portfolio Analysis and the Product Life Cycle

Hiram C. Barksdale and Clyde E. Harris, Jr., University of Georgia

Toward a theory of competencies for the management of product complexity: Six case studies

David J. Closs [†], Mark A. Jacobs [*], Morgan Swink, G. Scott Webb

Department of Supply Chain Management, Eli Broad Graduate School of Management, N370 North Business Complex, Michigan State University, East Lansing, MI 48824, United States

Received 7 June 2007; received in revised form 19 September 2007; accepted 5 October 2007
Available online 17 October 2007

George S. Day

Diagnosing the Product Portfolio

How to use scarce cash and managerial resources f(
long-run gains

Product portfolio architectural complexity and operational performance: Incorporating the roles of learning and fixed assets

Mark A. Jacobs [a,*], Morgan Swink [b,c]

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PRODUCT VARIETY, SOURCING COMPLEXITY, AND THE BOTTLENECK OF COORDINATION

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1982, Vol. 25, No. 4, 733-755.

The Product Portfolio and Profitability— A PIMS-Based Analysis of Industrial-Product Businesses[1]

IAN C. MacMILLAN
DONALD C. HAMBRICK
DIANA L. DAY
Columbia University

THE ECONOMICS OF PRODUCT VARIETY: A SURVEY

KELVIN LANCASTER
Columbia University

Portfólio de patentes

GESTÃO DE PORTFÓLIO E INDÚSTRIA FARMACÊUTICA

LGI Laboratório de Gestão da Inovação

Patent portfolios for strategic R&D planning

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Accepted 23 April 1998

Portfolio management in early stage drug discovery – a traveler's guide through uncharted territory

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EXPERT OPINION ON THERAPEUTIC PATENTS, 2018
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REVIEW

Check for updates

Patent portfolio management: literature review and a proposed model

Camila Kiyomi Conegundes De Jesus and Mario Sergio Salerno

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ABSTRACT

Introduction: Patents and patent portfolios are gaining attention in the last decades, from the called 'pro-patent era' to the recent billionaire transactions involving patent portfolios. The field is growing in importance, both theoretically and practically and despite having substantial literature on new product development portfolio management, we have not found an article relating this theory to patent portfolios.

Areas covered: The paper develops a systematic literature review on patent portfolio management to organize the evolution and tendencies of patent portfolio management, highlighting distinctive features of patent portfolio management. Interview with IP manager of three life sciences companies, including a leading multinational group provided relevant information about patent portfolio management.

Expert opinion: Based on the systematic literature review on portfolio management, more specifically, on new product development portfolio theory, and interview the paper proposes the paper proposes a reference model to manage patent portfolios. The model comprises four stages aligned with the three goals of the NPD portfolio management: 1 – Linking strategy of the Company's NPD Portfolio to Patent Portfolio; 2 – Balancing the portfolio in buckets; 3 – Patent Valuation (maximizing valuation); 4 – Regularly reviewing the patent portfolio.

ARTICLE HISTORY
Received 28 February 2018
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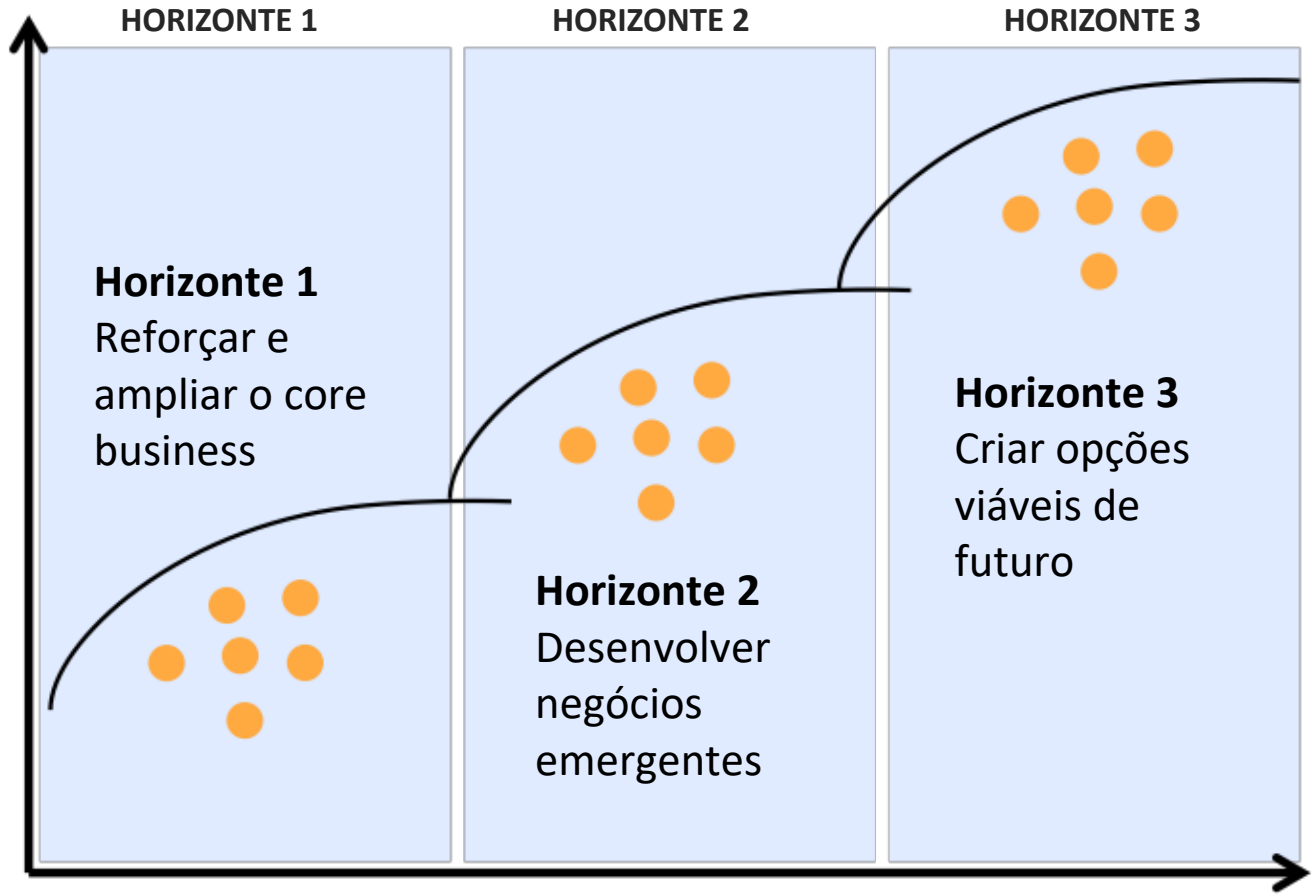
KEYWORDS
Patent portfolio management; portfolio management; intellectual property; patent strategy; patenting

Visão Prática Geral

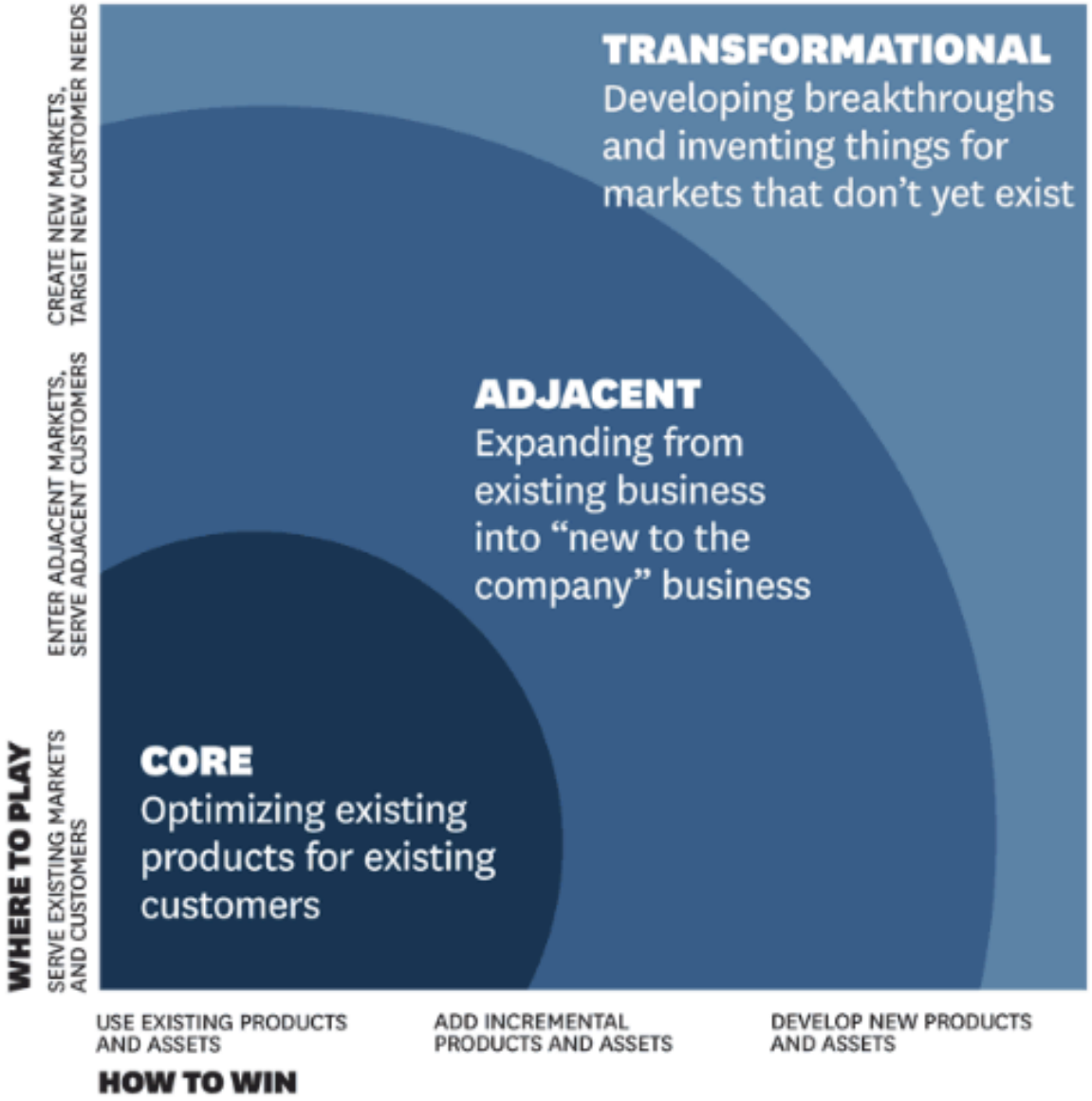
VISÃO PRÁTICA GERAL

Três Horizontes | A organização deve alocar os seus recursos garantindo a distribuição dos mesmos entre 3 horizontes de crescimento



VISÃO PRÁTICA GERAL

VISÃO PRÁTICA GERAL



VISÃO PRÁTICA GERAL

Carteiras estratégicas| Exemplo de aplicação para uma empresa do setor de meios de pagamento

1 Acelerar a entrada de novos meios de consumo e pagamento

- ✓ Fortalecer o **relacionamento com emissores de cartão** estratégicos por meio de acordos de longo prazo, focando em **desacelerar a expansão das bandeiras nacionais**
- ✓ Zelar pela observação dos **padrões de *compliance***
- ✓ Se manter como bandeira ***Top-of-mind***
- ✓ Implementar o programa de **relacionamento com os estabelecimentos comerciais**

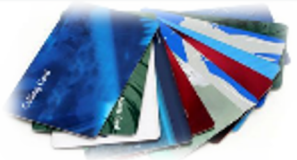
50%

2 Acelerar o crescimento no mundo digital

- ✓ Continuar a implementação do *roadmap* de **aquisições nos mercados em expansão acelerada**, focando a nova geração de *Gateways* de pagamento
- ✓ Reforçar alianças estratégicas para garantir a **aceitação preferencial no mundo digital**
- ✓ **Alavancar a nossa solução antifraude** como fonte de receita e diferencial aos olhos dos estabelecimentos comerciais

25%

3 Diversificar o negócio em termos de serviço



- ✓ Alavancar a aceitação internacional e o relacionamento com emissores locais para **acelerar o crescimento do negócio de cartões de viagem**
- ✓ Explorar as especificidades regulatórias regionais **para expandir o portfólio de cartões de benefício** para empregados

15%

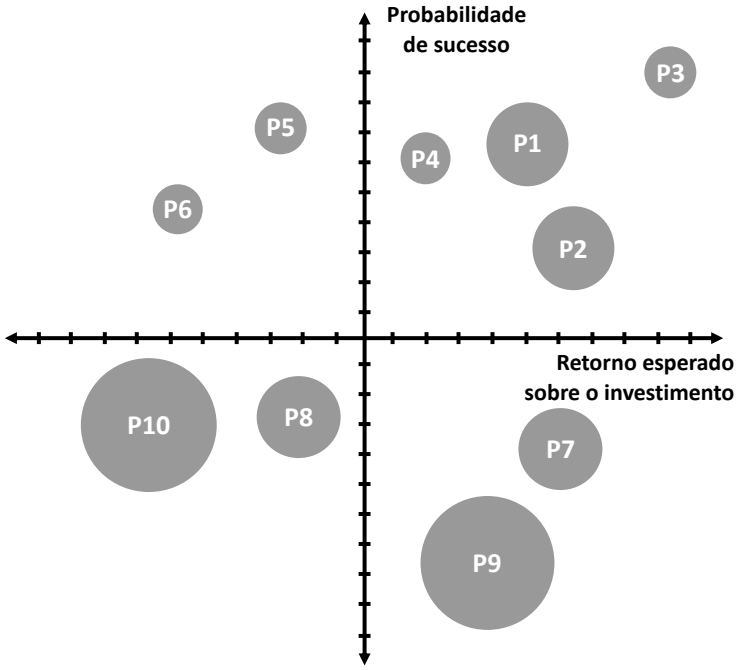
4 Reproduzir o sucesso na base da pirâmide

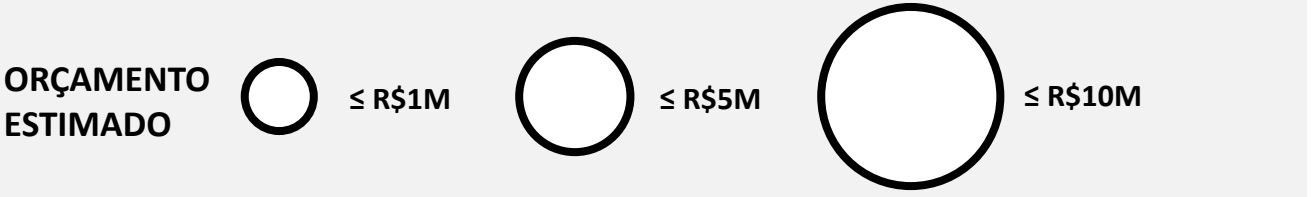
- ✓ Expandir parceiras bem sucedidas com Telecoms para **levar as soluções de pagamento via SMS para outros países** em desenvolvimento
- ✓ Utilizar o relacionamento com bancos estatais para alavancar a **emissão de cartões de débito para a população de baixa renda**

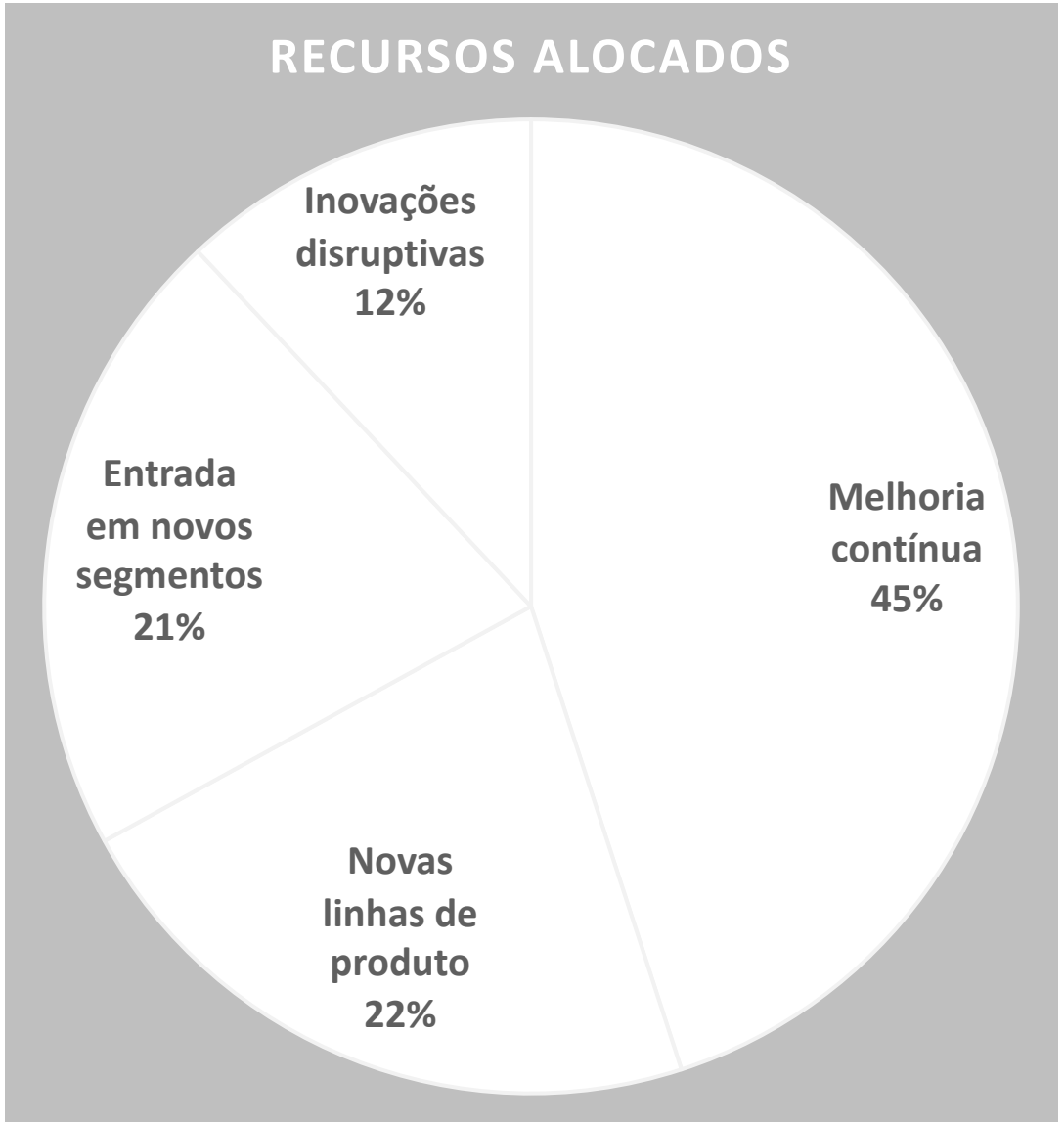
10%

VISÃO PRÁTICA GERAL

Análises Gráficas|
Analisando o portfólio visualmente é possível avaliar o alinhamento entre as prioridades estratégicas e a alocação dos recursos







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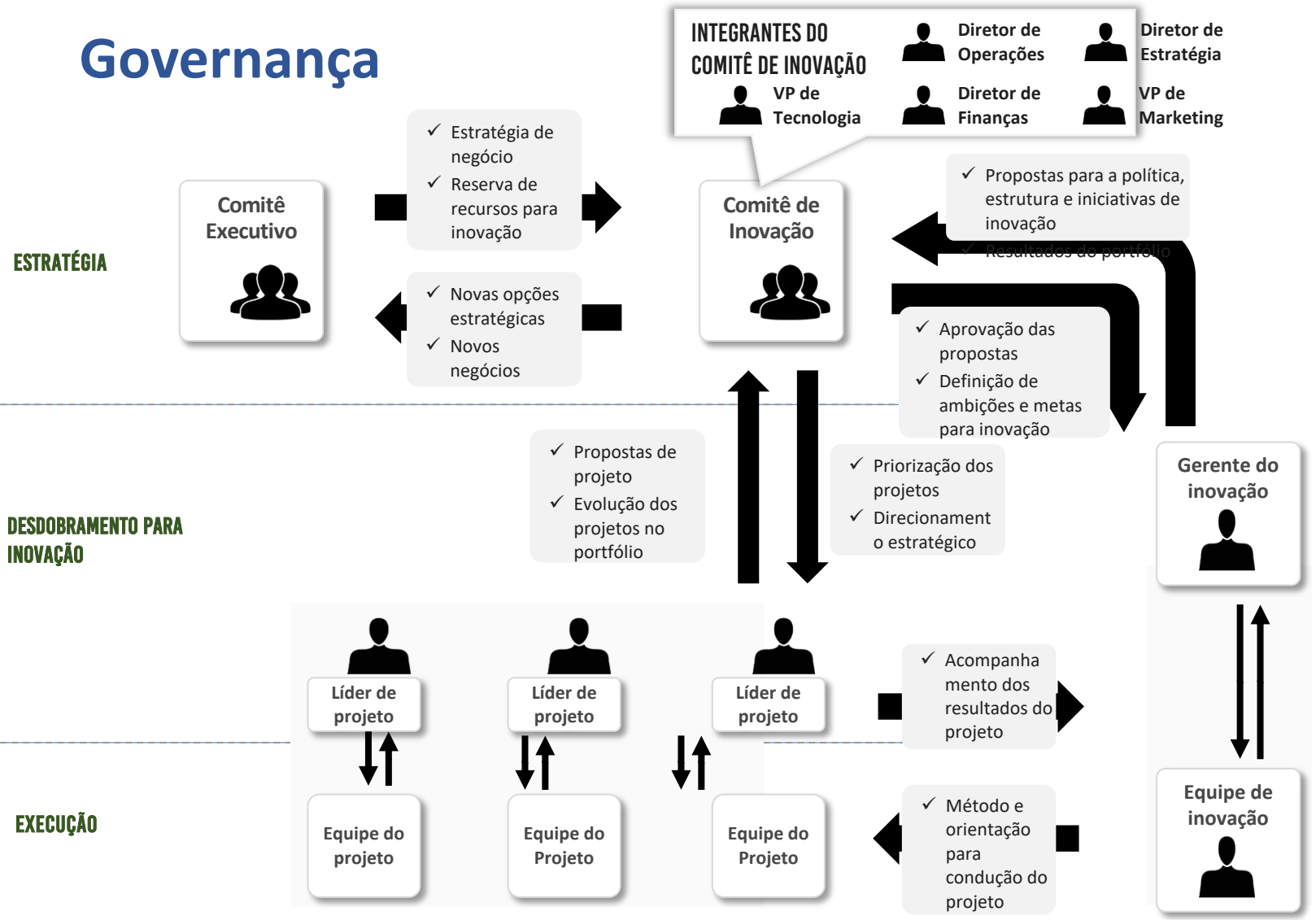
Governança



AGENDA DO COMITÊ DE INOVAÇÃO

1ª Reunião - Março

- ✓ Validação da Tipologia de inovação
- ✓ Temas para captação de ideias
- ✓ Oportunidades de captação de recursos e uso de incentivos fiscais

2ª Reunião – Abril

- ✓ Priorização das ideias levantadas e definição de equipes
- ✓ Validação do modelo Stage-Gate e Indicadores de inovação

3ª Reunião – Maio

- ✓ Validação da política de inovação
- ✓ Apresentação dos MVPs das iniciativas

4ª Reunião – Junho

- ✓ Apresentação do impacto das iniciativas em andamento
- ✓ Seleção das propostas de Parceria

Elaborado por Vinicius Chagas Brasil

Adaptado da apresentação de Jaime Frenkel – EloGroup

LGI, 2020 – Portfólio de Projetos de Inovação, Inovação Radical

VISÃO PRÁTICA GERAL

EXAME

Gol Uber Previdência Bolsonaro Revista Newslet

FELIPE SCHERER

Inovação na prática

As ideias de Felipe Scherer sobre inovação

SIGA

Gestão do Portfólio de Projetos de Inovação

Esse tema tem sido uma constante na prática da gestão da inovação. Na teoria parece lógico manter um portfólio balanceado com projetos de diferentes durações, investimentos, áreas do negócio e até mesmo riscos. O que tenho visto na prática é que nem sempre esse balanceamento nos tipos de projetos tem sido bem assimilados. É claro que o ideal seria termos somente projetos que conciliassem baixo risco e trouxessem altos retornos [...] Leia mais

Por **Felipe Scherer**

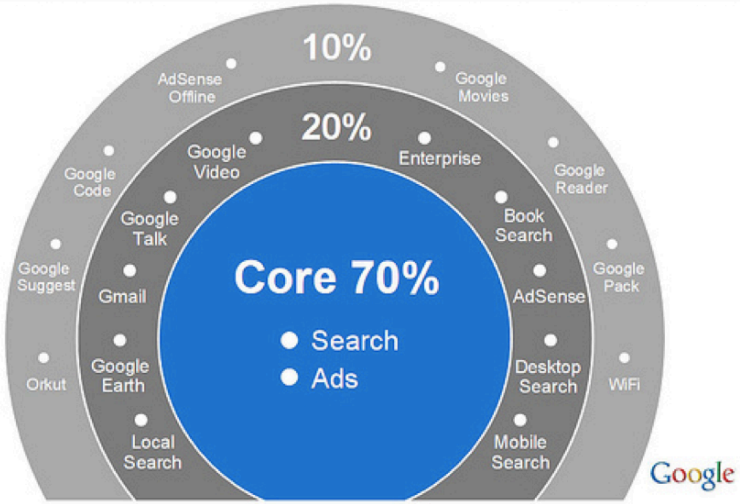
Os consultores Bansi Nagji e Geoff Tuff apontam que um portfólio adequado deve conter 3 padrões principais:

1) Core – são aqueles que giram em torno do produto atual no mercado atual, visando otimizações e melhorias.

2) Adjacente – são ações que buscam oportunidades em áreas adjacentes ao negócio atual da empresa.

3) Transformador – esses tratam de inovações mais radicais em mercados ou necessidades que ainda não são ocupados pela empresa com os produtos e tecnologias atuais ou mesmo não estão desenvolvidos.

70-20-10 Product Framework



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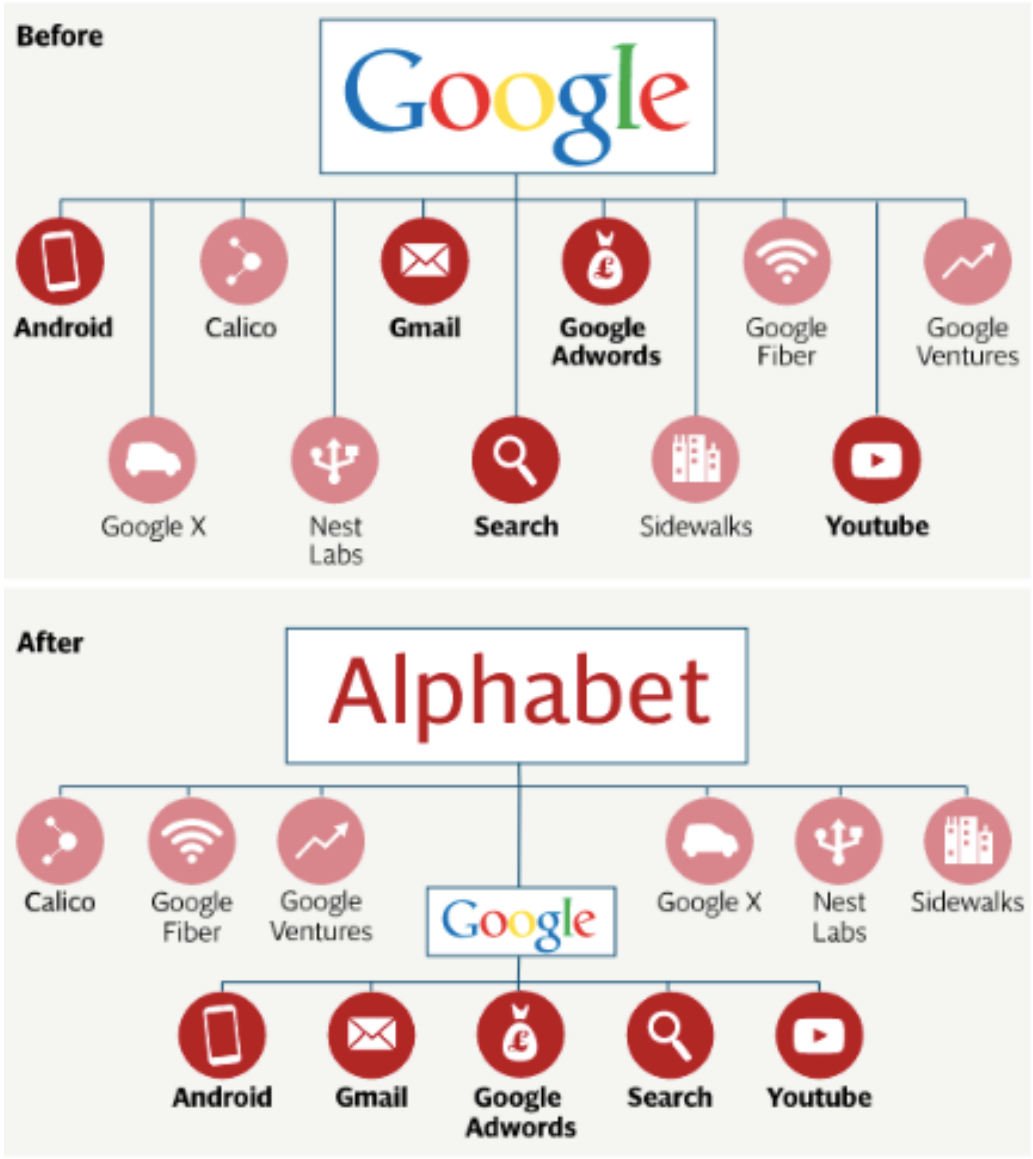

E a Inovação Radical?

E A INOVAÇÃO RADICAL?

As diferenças na natureza dos projetos são muitas, por exemplo:

Questão gerencial	Inovação corrente	Inovação radical
Momento de investimento e foco de receita	**Novos produtos** em seis a dezoito meses; **gestão do lucro-e-prejuízo** com correntes de receita dentro do ano	**Novos negócios** em três ou cinco anos; **retorno de investimento** em longo prazo com **gestão de portfólio para cercar e proteger o risco**
Processos de gestão de projeto	Processos "**phase-gate**" e **engenharia simultânea**	Processos "**discovery-driven**" e "**learning plans**"

Fonte: O'Connor et al. (2008)

Elaborado por Vinicius Chagas Brasil

E A INOVAÇÃO RADICAL?

As diferenças no sistema de gestão de cada tipo de inovação também são relevantes:

Aspectos do sistema de gestão	Gestão da inovação não radical	Gestão da inovação radical
Processos	***"Stage-gate"*, orientada para gestão de projetos; avessa a desvios de orçamento e cronograma**	Orientada para **aprendizado e experimentação**, permite redirecionamento baseado em **novos *insights***
Governança e tomada de decisão	**Critérios *"Go-or-Kill"* claros *a priori*, tomada de decisão hierárquica**	**Decisões** tomadas com **base no direcionamento estratégico** e **aprendizagem continuada**; **critérios não claros *a priori***, governança ao invés de hierarquia

Fonte: O'Connor et al. (2008)

Elaborado por Vinicius Chagas Brasil

E A INOVAÇÃO RADICAL?

RELATED EXPERTISE: INNOVATION & PRODUCT DEVELOPMENT, LEAN & MANUFACTURING, OPERATIONS

Managing the "Unmanageable"

Radical Innovation

SEPTEMBER 25, 2013

By David Küpper, Markus Lorenz, Andreas Maurer, and Kim Wagner

In recent decades, one of management's objectives has been to add discipline to innovation. Companies have greatly improved the efficiency of new-product development, and managers have been able to draw on a variety of processes, methods, and tools to maximize the return on their R&D investment.

E A INOVAÇÃO RADICAL?

What is/are in your view the largest barrier(s) at board level to addressing and working with radical innovation?

- Lack of time - **21.46%**
- Lack of insight - **46.72%**
- Presence of risk - **19.19%**
- Lack of organizational design to handle radical innovation - **46.46%**
- Other - **7.32%**

Insight and organizational design

When we analyze barriers to addressing and working with radical innovation, this survey displays some clear results. Boards are busy, and according to the survey data, there is a certain element of lack of time (21%). Also the presence of risk is another barrier accounting for 19% of the responses. But the two dominant barriers are lack of insight (47%) and lack of organizational design to handle radical innovation (46%).

We know that an integral part of working with radical innovation is experimentation which itself has a huge element of failure and learning. We therefore continue our journey with exploring the global boards' assessment of failure. The data reveal that 18% of boards try to avoid failure in all their dealings. 8% take chances and welcome failure. This compares well to the boards' risk profile where 34% try to avoid big financial risks and only 6% are willing to take big bets. The bulk of data stem from 55% of boards learning from failure and trying harder or smarter next time.

E A INOVAÇÃO RADICAL?

J PROD INNOV MANAG 2014;31(3):552–566
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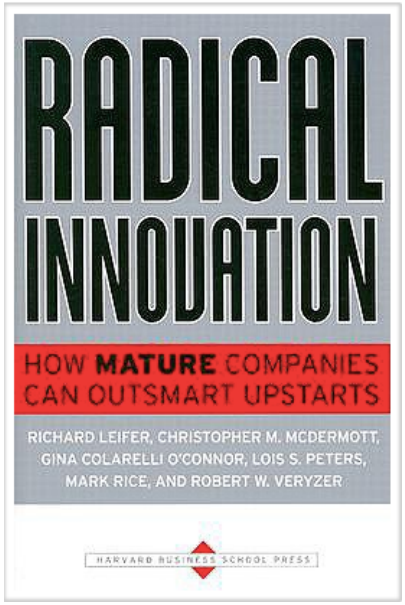
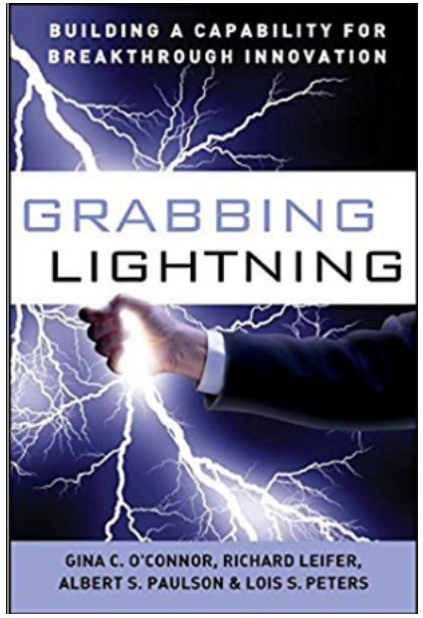
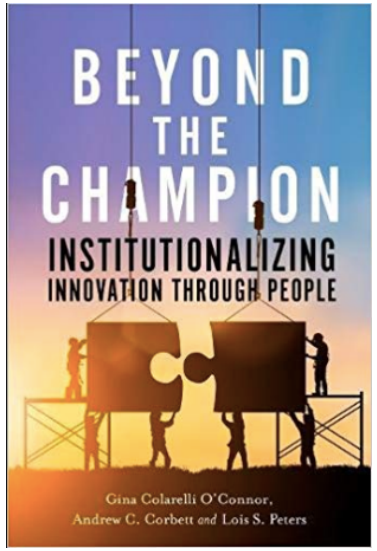
DOI: 10.1111/jpim.12113

Radical Product Innovation Capability: Literature Review, Synthesis, and Illustrative Research Propositions

Stanley F. Slater, Jakki J. Mohr, and Sanjit Sengupta







J PROD INNOV MANAG 2017;34(4):394–405
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DOI: 10.1111/jpim.12391

Special Issue Editorial

Organizing for Radical Innovation: Exploring Novel Insights*

Massimo G. Colombo, Georg von Krogh, Cristina Rossi-Lamastra and Paula E. Stephan

E A INOVAÇÃO RADICAL?

LGI Laboratório de Gestão da Inovação

Forbes

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How To Secure Radical Innovation With A Portfolio Approach

Peter Hinssen Contributor ⓘ

This article is part of a series about how organizations can survive their day after tomorrow by focusing on radical innovation. Read part 1, part 2, part 3, part 4 and part 5.

There are many ways companies can accelerate and boost their innovation ventures in order to thrive in their "day after tomorrow." The success of each approach will always depend upon its match with the size, culture or structure of the organization. Some seclude their innovation teams to protect them from corporate suffocation. Others use short but highly

Harvard Business Review

INNOVATION

Managing Your Innovation Portfolio

by Bansi Nagji and Geoff Tuff

FROM THE MAY 2012 ISSUE

Summary Save Share 0 Comment Text Size Print $8.95 Buy Copies

ARTWORK: RICKY ALLMAN, WE CAN SEE YOU, 2010, ACRYLIC ON PANEL, 12″ X 16″

Management knows it and so does Wall Street: The year-to-year viability of a company depends on its ability to innovate. Given today's market expectations, global competitive pressures, and the extent and pace of structural change, this is truer than ever. But chief executives struggle to make the case to

E A INOVAÇÃO RADICAL?

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Como lidar com as diferenças entre projetos de inovação incremental e radical no mesmo sistema de gestão?

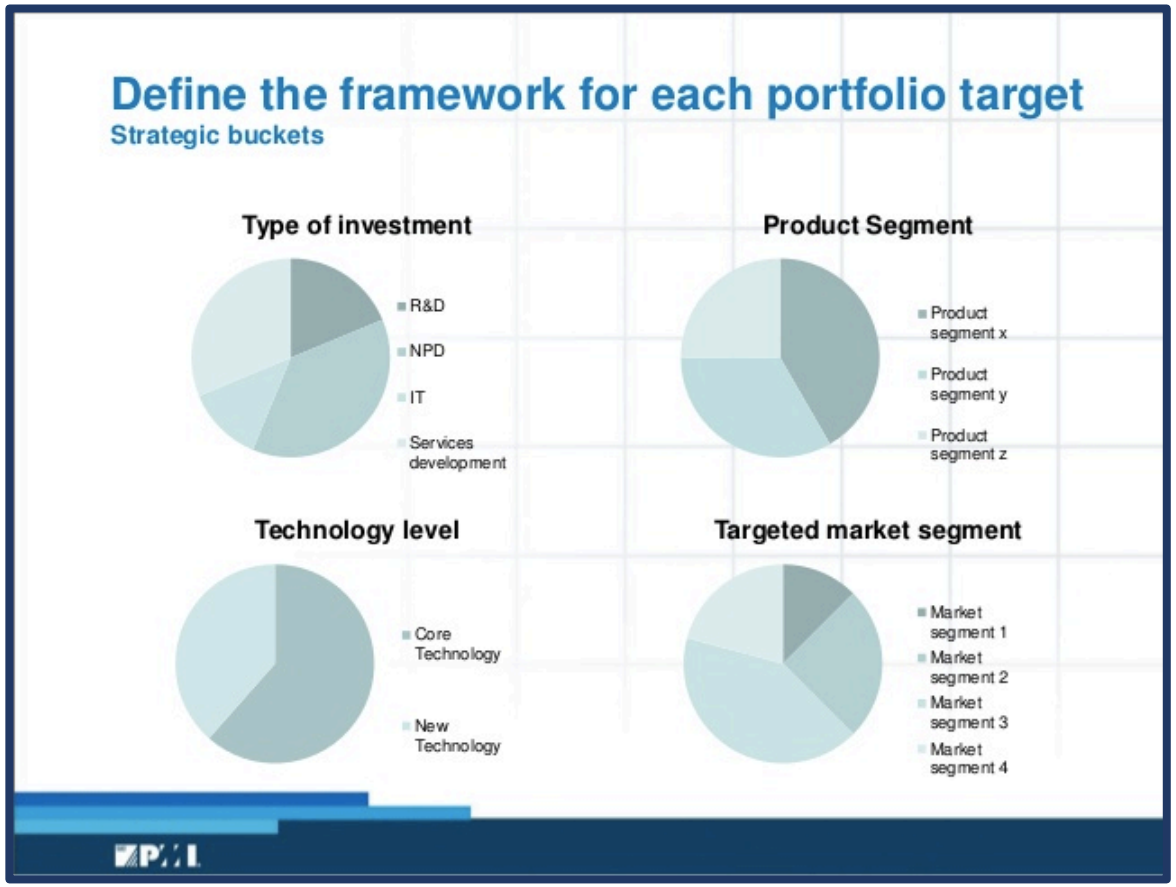
E A INOVAÇÃO RADICAL?

A decisão **financeirizada** (mesmo que não diretamente por **métodos financeiros**), dificulta a **inovação radical**.

"**A única correlação negativa significativa encontrada é entre o uso de métodos financeiros e a capacidade do programa de novos produtos em levar a empresa à outras arenas de produtos.** Análises posteriores sobre os métodos atuais usados devem revelar mais sobre essa relação. É possível que o **desenho de métodos financeiros** estabelecidos **subvalorize oportunidades** em novas arenas de produtos, e assim resultam em decisões que afetam negativamente o desempenho nessa área. **Apesar de medidas financeiras serem parte da maioria dos processos de gestão de portfólio de projetos, essa pesquisa indica que métodos financeiros podem não ser os melhores métodos dominantes de portfólio a serem utilizados.**" (Killen et al., 2008, p. 34)

E A INOVAÇÃO RADICAL?

Strategic Buckets, certo?



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Strategic Buckets, certo?

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ISSN 0025-1909 | EISSN 1526-5501 | 08 | 5405 | 0907

informs

DOI 10.1287/mnsc.1070.0828

A Theoretical Framework for Managing the New Product Development Portfolio: When and How to Use Strategic Buckets

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variance in performance (risk). Thus, NPD managers seek to maximize expected reward while reducing risk. Throughout the remainder of §4 we focus our attention on the issue of expected performance. In §5 we extend our analysis to explicitly consider the risk inherent in NPD programs.

4.1. Expected Performance for a Single NPD Program

The commitment to a particular type of innovative effort for a given interval of time captures precisely the intuition behind strategic buckets. For any $d \in \{1, 2, \ldots, N\}$, the firm invests $c(d)$ dollars per period and improves product performance to $\hat{V}(d)$ with probability $p(d)$ in each period.[1] Of course, if the attempted NPD effort is not successful, product performance remains unaltered. We can express the expected performance after n periods for an NPD program of type d through the following recursive equation:

$$J_n^d = \max\{0, -c(d) + rp(d)\hat{V}(d) + r[1-p(d)]J_{n+1}^d\}, \quad (1)$$

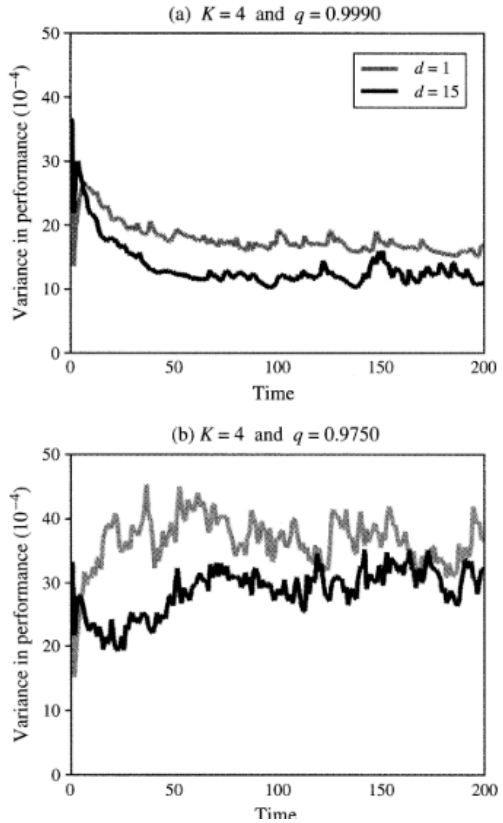
$$J_0^d = [-c(d) + rp(d)\hat{V}(d)]\frac{1-r^m[1-p(d)]^m}{1-r[1-p(d)]}. \quad (2)$$

For a given type of innovative effort, Equation (2) defines the expected return curve for the NPD program as a function of the time commitment, m. The following proposition describes the behavior of the NPD program return curves (all technical details can be found in the online technical appendix).

Proposition 1 (Behavior of NPD Program Return Curves). *J_0^d is increasing and concave in m. Furthermore, for $d_1 < d_2$, $J_0^{d_1} > J_0^{d_2}$ for $m = 1$ provided that $p(d_1)\hat{V}(d_1) > p(d_2)\hat{V}(d_2)$ and $c(d_1) < c(d_2)$. Additionally, there exist threshold values $\bar{p}$ and $\underline{p}$ such that $p(d_1) > \bar{p} > \underline{p} > p(d_2) \Rightarrow J_0^{d_1} < J_0^{d_2}$ as $m \to \infty$.*

The conditions described in Proposition 1 intuitively capture the key differences between incremental and radical innovation. The requirements $p(d_1)\hat{V}(d_1) > p(d_2)\hat{V}(d_2)$ and $c(d_1) < c(d_2)$ simply translate to higher net payoff for incremental innovation on a short-

Figure 7 Variance Over Time in the Presence of Technological or Market Disruption



E A INOVAÇÃO RADICAL?

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Melhorar a valoração de projetos com incerteza?

A REAL OPTIONS LOGIC FOR INITIATING TECHNOLOGY POSITIONING INVESTMENTS

RITA GUNTHER MCGRATH
Columbia University

In this article I extend real options theory to technology positioning projects and specify how the relationship between boundary conditions and uncertainty influences the value of a technology option, as well as the appropriate timing of its exercise. I also take a strategic perspective on uncertainty itself, concluding that option value can be amplified by investments to shift boundaries, ideally in ways that are idiosyncratic to the firm.

REAL OPTIONS REASONING AND A NEW LOOK AT THE R&D INVESTMENT STRATEGIES OF PHARMACEUTICAL FIRMS

RITA GUNTHER McGRATH* and ATUL NERKAR
Graduate School of Business, Columbia University, New York, New York, U.S.A.

On the Value of Flexibility in R&D Projects

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Project Management Under Risk: Using the Real Options Approach to Evaluate Flexibility in R&D

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on rule at the beginning of Stage 2 (at
δ has been revealed) is clear: Continue if
and abort otherwise. We can invert Π(δ)
ite the prior probability of continuation
(c_2)], where Π^{-1} stands for the inverse.
is to write the optimal project value and
he project (which assumes continuation
the delay). The value of the abandon-
is the difference:

$$V_0(0) = -c_1 + P\{\delta \le \Pi^{-1}(c_2)\} \times E\left[\Pi(\delta) - c_2 | \delta \le \Pi^{-1}(c_2)\right];$$

$$NPV = -c_1 - c_2 + E\left[\Pi(\delta)\right]; \quad (6)$$

$$\text{Option value} = P\left\{\delta > \Pi^{-1}(c_2)\right\} \times \left(c_2 - E\left[\Pi(\delta) | \delta > \Pi^{-1}(c_2)\right]\right).$$

Management of R&D Projects Under Uncertainty: A Multidimensional Approach to Managerial Flexibility

Leonardo P. Santiago and Thomas G. Bifano

If the payoff function Π(δ) *is convex* (*concave*), *an increasing schedule variability* ν^2 *may decrease* (*increase*) *the option value of flexibility.*

Two simple examples best illustrate the essence of the argument. First, suppose, there is a critical introduction date δ_{crit} (for example the announced introduction date by a competitor or a regulatory deadline), beyond which revenues suffer discontinuously. Π(δ) is unaffected at $H > c_2$ as long as $\delta < \delta_{crit}$, but it drops to $L < c_2$ if $\delta \ge \delta_{crit}$. Suppose also

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Melhorar a valoração de projetos com incerteza?

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Valuation of innovation projects with high uncertainty: Reasons behind the search for real options

Vinicius Chagas Brasil[a,*], Mario Sergio Salerno[a], Leonardo Augusto de Vasconcelos Gomes[b]

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E A INOVAÇÃO RADICAL?

Um dos **problemas sistemáticos** encontrados na literatura para a **gestão de portfólio** de novos produtos é a **mudança do foco dos portfólios** de inovações mais **radicais** para inovações **incrementais** (Kester et al., 2011).

"O fato é que nos **últimos 15 anos**, portfolios derivaram de **moderadamente balanceados** para extremamente **desbalanceados**, com muito mais projetos muito pequenos e poucas iniciativas de inovação mais **disruptiva**" (Cooper, 2013, p. 25).

"Uma causa relacionada à **escassez** de projetos mais **inovadores** é a **incapacidade** de reservar **recursos estratégicos** para **alimentar** essas iniciativas importantes" (Cooper, 2013, p. 26).

"(...)o **balanceamento de portfólio** sugerido permanece sendo um **direcionamento vago**, que é resolvido em bases de **caso-a-caso**. Pelo nosso conhecimento, **decisões** referentes aos **baldes estratégicos** e à **proteção de recursos** têm **pouca** ou nenhuma **fundamentação teórica** (Chao e Kavadias, 2008, p. 908).

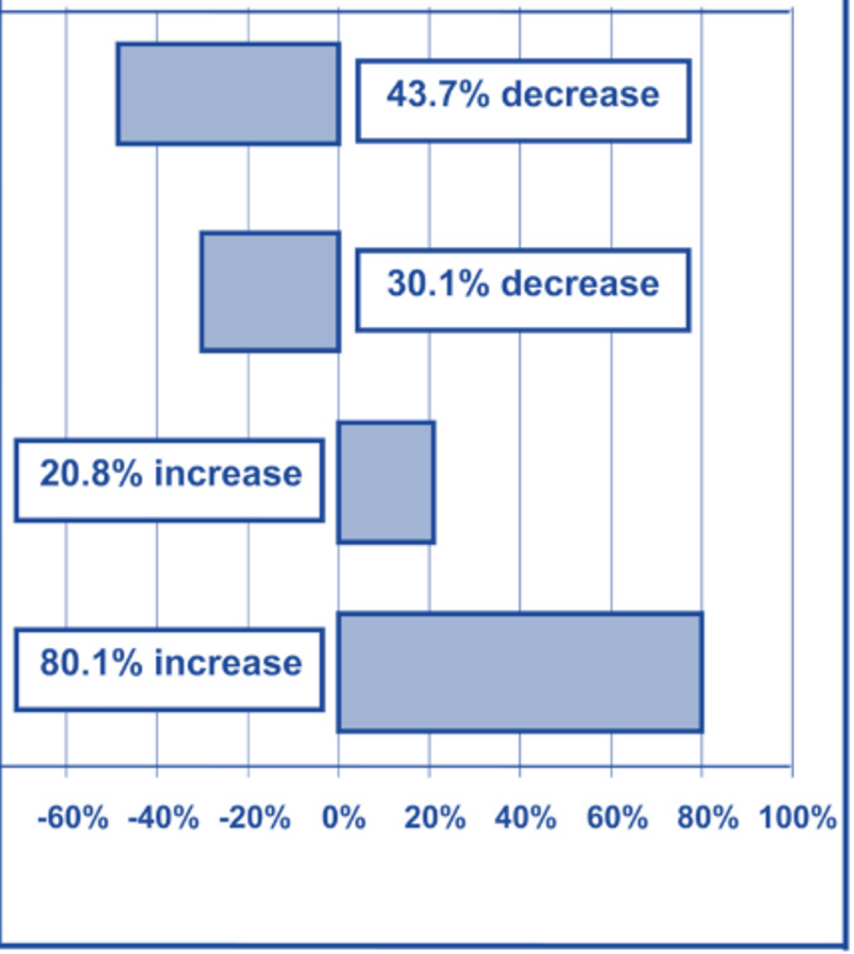
E A INOVAÇÃO RADICAL?

Entretanto...

Where are all the breakthrough new products? (Cooper, 2013)

E A INOVAÇÃO RADICAL?

Project Type	1990s	2000s
New to world, new to market – innovations	20.4%	11.5%
New product lines to the company	38.8%	27.1%
Additions to existing product line in company	20.4%	24.7%
Improvements & modifications to existing company products	20.4%	36.7%
Total	100.0%	100.0%



Fonte: Cooper (2013)

Elaborado por Vinicius Chagas Brasil

E A INOVAÇÃO RADICAL?

Apesar da **segmentação** e **balanceamento** como hoje entendida...

A gestão dos projetos **de inovação radical** continua uma **extensão** da gestão **tradicional** (Por exemplo: Ferramentas de avaliação de Paulson et al., 2007).

E A INOVAÇÃO RADICAL?

Além do desenvolvimento de **modelos** e **ferramentas** para **gestão do portfólio de projetos de inovação radical**, quais outros aspectos **organizacionais**, **gerenciais** e **decisórios** impactam a sobrevivência desse tipo de projeto quando **competindo** com **projetos incrementais**?

E A INOVAÇÃO RADICAL?

Traps na gestão de portfólio de inovação radical

TRAP #1: Tratar projetos de inovação como ativos financeiros

TRAP #2: "One size fits all"

TRAP #3: Acreditar que separação e balanceamento resolvem tudo per si

TRAP #4: Preferência por erros de omissão

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?

LGI Laboratório de Gestão da Inovação

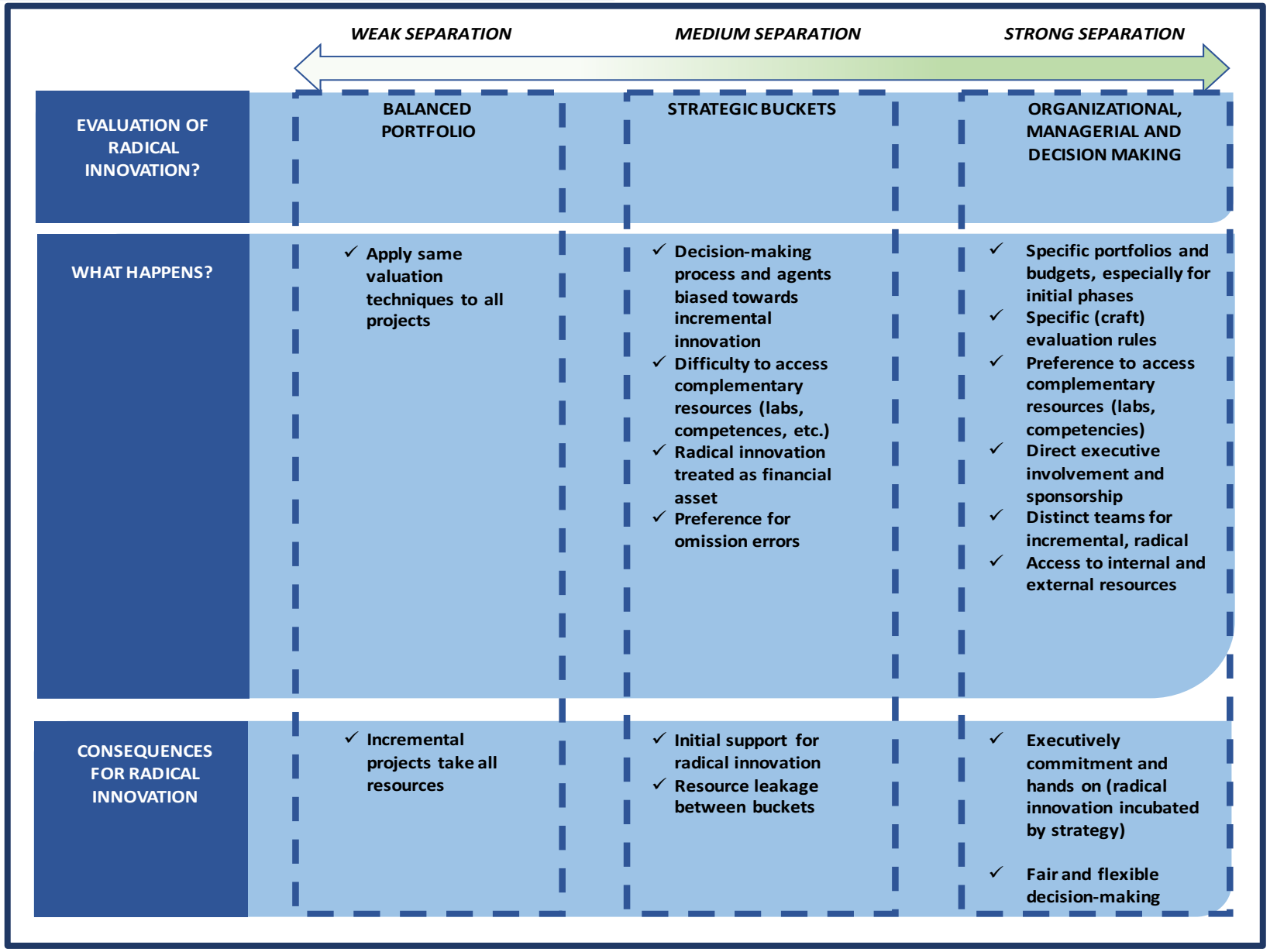
Cuidados na gestão de portfólio de inovação radical

! ***Ênfase na decisão adequada ou justa, não na igualdade***

! ***Inovação radical é incubada pela estratégia***

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?



Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?

A **inovação radical** envolve mais que **processos** de avaliação específicos, mas todo um **sistema de gestão multinível**. Deve-se buscar uma ***"separação forte"*** entre os **portfólios** de projetos **incrementais** e **radicais**.

E A INOVAÇÃO RADICAL?

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Estratégia

	WEAK SEPARATION	MEDIUM SEPARATION	STRONG SEPARATION	
Does executives demonstrate strategic intent to pursue radical innovation?	None	Discussed in planning process, but no specific mandate	Strategic planning identifies key targets for radical innovation efforts	STRATEGIC
Are executives directly supervising radical projects?	No	Executives participate to show support or to understand process, but take no direct part	Executives actively participate in discussions and evaluations for radical projects	
Do managers championing radical projects have access to executives?	No open access	Access is ad hoc, based on personal connections	Formal guidelines for how managers can access executives to understand strategic role of projects	

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?

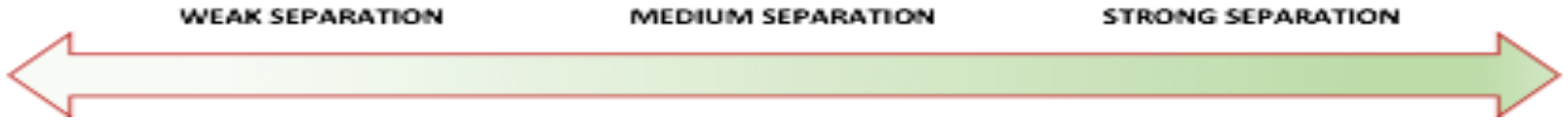
Organização

Are there separate budgets for radical and incremental projects?	Single portfolio	Buckets exist, but processes allow reallocation	Buckets with clear, formalized separation	ORGANIZATIONAL
Does the same committee discuss both types of projects in the same meeting?	Single committee, single meeting	Different meetings, but nearly same participants and same agenda, process	Projects have completely independent agenda, participants and evaluation process	
How are large capital expenditures for radical innovation considered?	Similar to other expenses	Radical innovation has dedicated access to limited funds for testing, prototyping but follows generic process for larger investments	Formalized, independent process for discussing major budget allocations for radical projects	
Who works on radical projects?	Same teams work on incremental and radical projects	Distinct teams, but shared space and resources	Distinct teams, locations, resources	
How do radical innovation teams access external and internal resources?	No clear access to resources	Access resources by bypassing formal processes	Formal process with executive involvement to evaluate need to access resources	

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?

Projeto

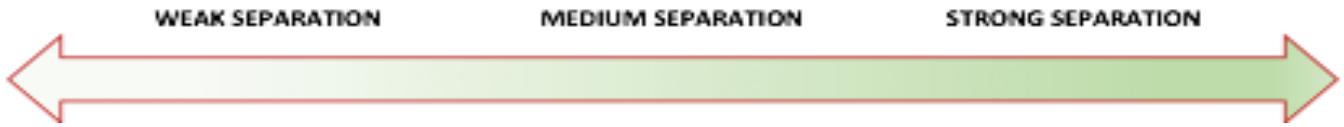


Are there different project management and evaluation processes for radical, incremental projects?	Standardized processes	Distinct processes (or one process but informal acceptance of violation), but standard format for all radical projects	Distinct processes with expectation of customization for each project (determined ex ante)	PROJECT
What is basis for evaluation criteria for radical projects?	Financial	Mix of financial and non-financial	Strategic, learning, experimentation	
Can radical projects shift technological and market domains?	No	Only by bypassing formal processes	Project charter allows for evaluation of need to change domains	

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

E A INOVAÇÃO RADICAL?

Indivíduos



What is the nature of incentives for innovation managers?	Based on project success (favoring short term)	Managers face conflicting incentives	Clear rewards for leading important, strategic projects irrespective of outcomes	INDIVIDUAL
Do innovators managers act as entrepreneurs, employing a craft management approach?	Managers are risk averse	Champions act as entrepreneurs, but are not recognized by formal establishment	Managers feel empowered, with autonomy to take risks and uncertain tasks	
Is innovation manager authority based on financial metrics or strategic innovation?	Legitimation based on financial power	Formal legitimation of strategic needs, but processes default to financial	Using non-financial arguments to legitimate decisions is acceptable	
Do innovation managers have appropriate mental models to deal with radical projects?	Mental models revolve around current, mature technologies	Mental models recognize importance of radical innovation, but not means to achieve success	Mental models encompass experimentation, learning, deal with poor data and "unknowns-unknowns"	

Fonte: Brasil, Salerno, Eggers, Gomes (*work in progress*)

Obrigado!

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