

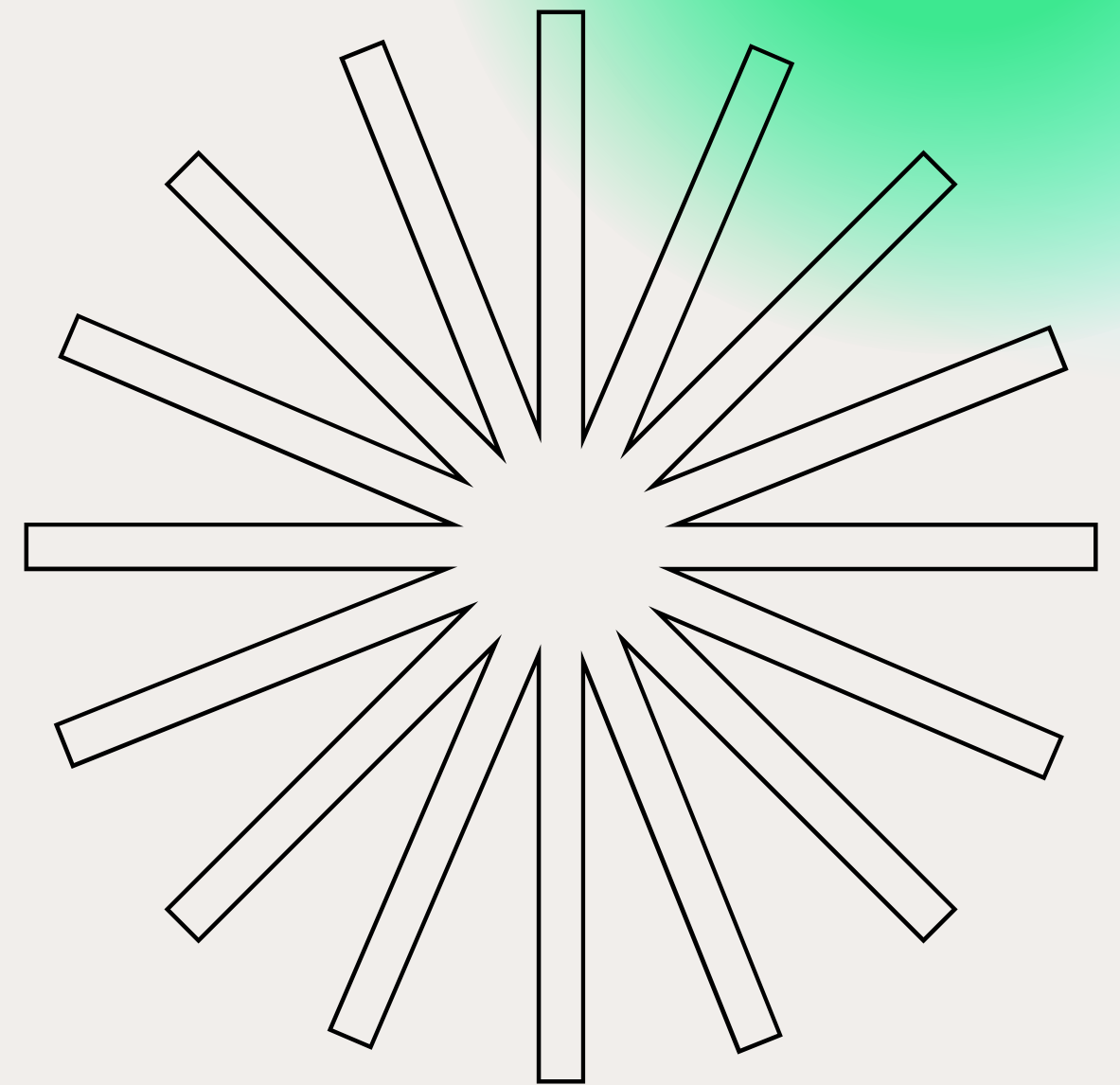
# **Innovation management**

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## CONTENT

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- Methods and instruments
- Breakthrough innovations



**I.**

**Innovation management** is a science that studies the mechanisms of effective management and stimulation of innovation processes at the micro and macro level in order to ensure the strengthening and development of competitive positions of the company, regions and countries through the creation, commercialization and development of innovations in various sectors of the economy

**II.**

**The objects** of innovation activity are:  
the processes of creation,  
development of production and commercialization of innovations,  
the processes of distribution and use of new products, new services and technologies



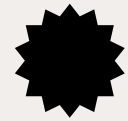
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# General methods

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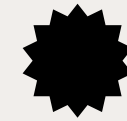
**Methods of analysis:**  
graphical, comparison,  
balance



**Planning method**



**Methods of strategic and  
metric marketing:**  
modeling, segmentation,  
evaluation and analysis,  
research



**Forecasting methods:**  
normative, expert,  
parametric

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# Specific methods

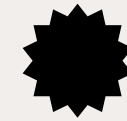
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**System analysis**



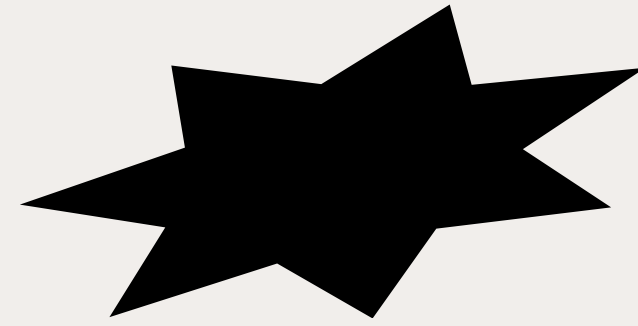
**Factor analysis**



**Situational analysis**

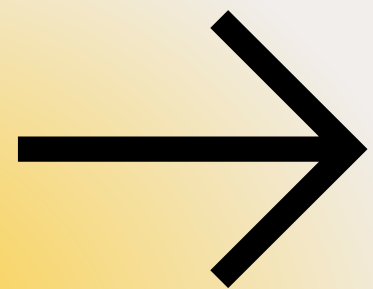


**Functional and cost  
analysis**

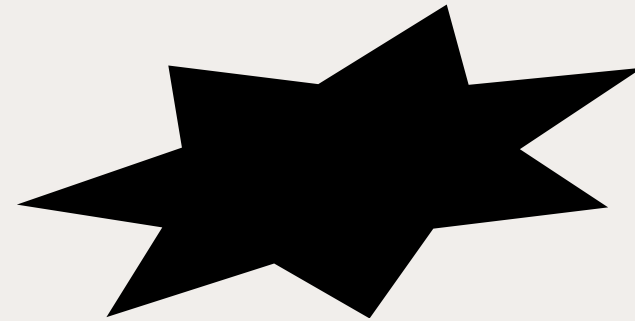


# Methods and tools of innovation management

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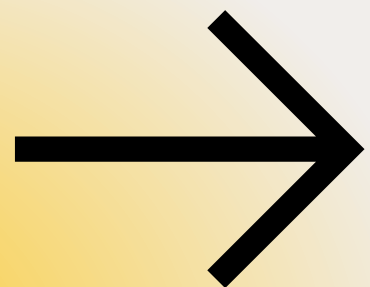
- statistical (factorial) models developed on the basis of correlational and regressive dependencies of innovations
- normative methods of innovation activity planning
- regulation of management procedures - they include regulations on industries and services, job descriptions
- economic and mathematical modeling of the processes associated with decision-making in each of the management functions separately
- optimization models of organizational structure formation and thematic plans



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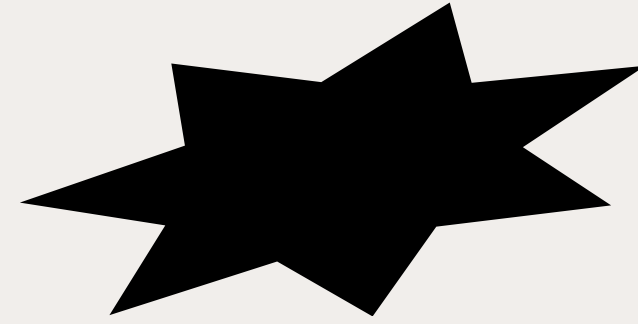
# **Methods and tools of innovation management**

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- scheduling of work, network methods
- adaptation of system parameters to environmental conditions
- the product of the quality assessment of the "input, output, process" in the system
- economic and mathematical modeling, probabilistic models
- project management

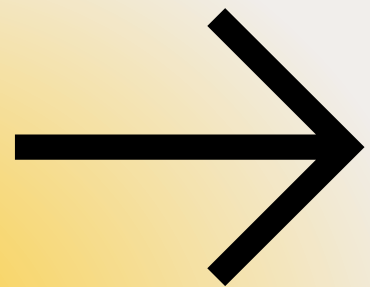




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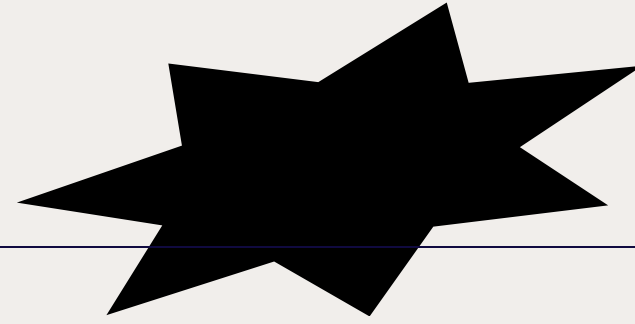
# **Methods and tools of innovation management**

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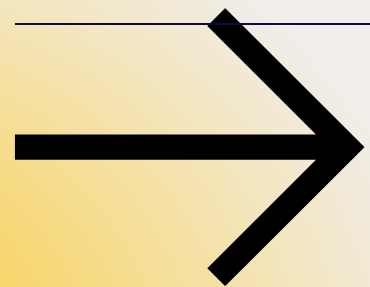


- development scenarios
- consideration of external and internal circumstances of innovation success
- creative application of innovative managers, all available tools in connection with the situation
- conflict management methods
- methods of creative management

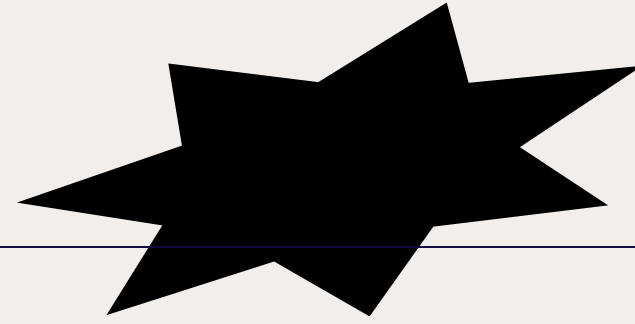




## **Methods of innovation management, taking into account their systemic and process nature**



- methods for identifying opinions: interviewing methods, methods of sample surveys and examinations
- analytical methods: integral and differential calculus, search for extremums of functions, calculus of variations; mathematical programming; methods of game theory, algorithm theory, risk theory, etc.
- evaluation methods: methods for evaluating the product and its competitiveness, assessing the organizational and technological level of production, methods of significance trees, evaluating innovative efficiency, etc.



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## **Methods of innovation management, taking into account their systemic and process nature**

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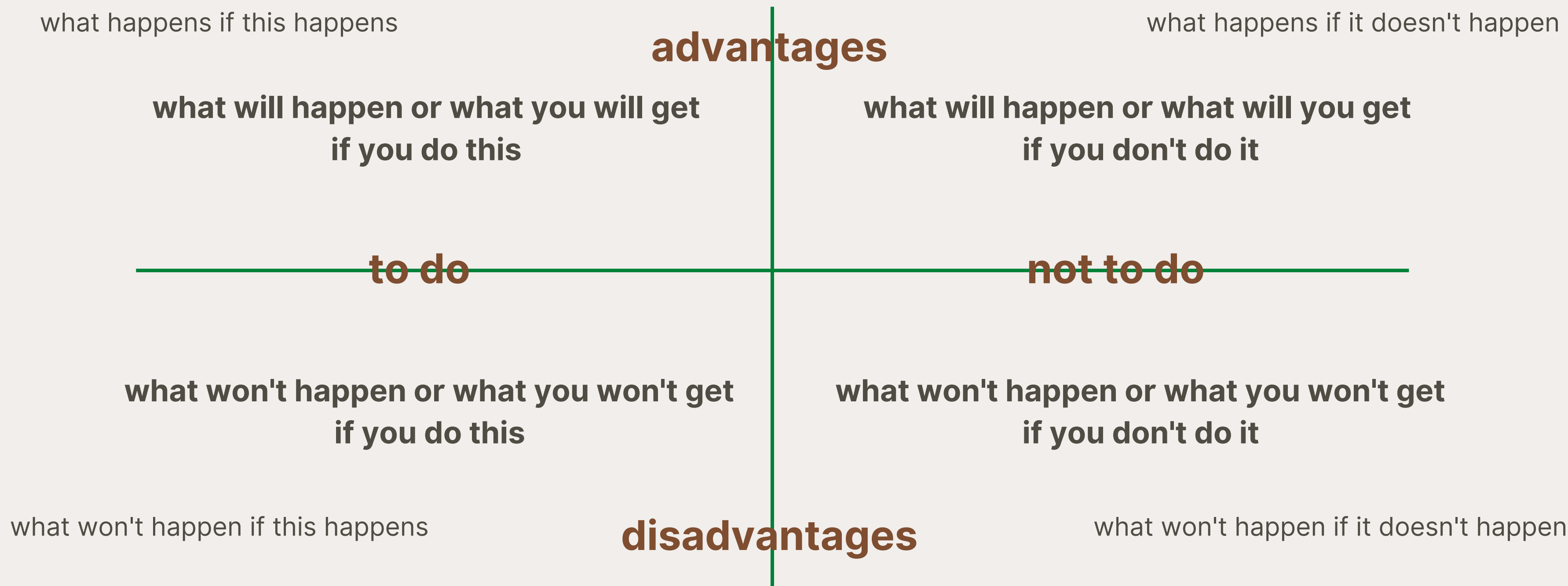
- methods for generating ideas and concepts. These include methods of "brain attack" and morphological analysis
- methods of decision-making: methods of building a "decision tree", comparing alternatives
- statistical methods
- Delphi method
- methods of visual representation

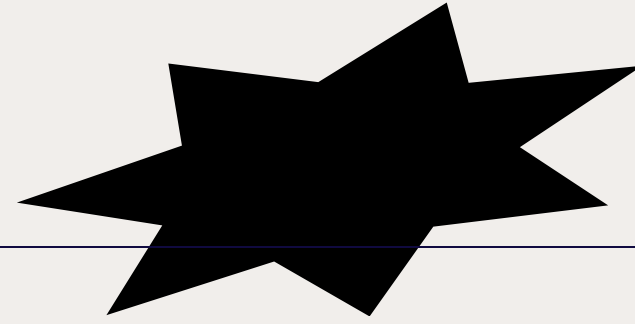
# Descartes Square

**Descartes square** is a decision—making technique that requires a small amount of time, and allows you to reduce the least significant selection criteria, sift them out in favor of the most promising. Also, the Descartes Square helps to assess the consequences of each of the possible choices and compare them.

- **what will happen or what you will get if you do this** - prescribe all the advantages of the occurrence of the event
- **what will happen or what will you get if you don't do it** - prescribe all the advantages if the event does not occur
- **what won't happen or what you won't get if you do this** - prescribe all the disadvantages of the occurrence of the event
- **what won't happen or what you won't get if you don't do it** - prescribe all the disadvantages if the event does not occur

# Descartes Square





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## **Methods of innovation management, taking into account their systemic and process nature**

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- comparison methods
- script methods
- the method of "brainstorming"
- index methods
- graphical methods

**Brainstorm** takes place in several stages.

- stage 1 - topic/task formation - the problem is presented
- stage 2 - generation of ideas + criteria - all participants are asked to freely present their ideas for solving the problem regardless of how real they are; the main task is to sound as many ideas as possible

Criticism of your own and other people's ideas is prohibited.

- stage 3 - evaluation of the result - ideas are selected and evaluated

Rules: distribution of roles (the moderator - manages the process, the timekeeper - keeps track of time, the secretary - takes notes); a clear time limit is set for generating ideas; all ideas are recorded without discussion (near incomprehensible is put ? or \*)

evaluation of the result - the option best suited to the criteria is selected

The **comparison method** makes it possible to evaluate the work of an innovative enterprise, determine deviations from planned indicators, establish their causes and identify reserves. The main comparisons are carried out by comparing the reporting indicators with the planned ones, the reporting and planned indicators are compared with the indicators of previous periods. The compared indicators should be comparable

**Factor analysis** is based on the determination of the degree of influence of factors on the function or effective feature. This is necessary to develop a plan of organizational and technical measures to improve the functioning of the innovation facility. In order to apply factor analysis, it is necessary to carry out a lot of preparatory work and time-consuming actions to establish calculation models



The **index method** is necessary to study complex phenomena when individual elements cannot be measured. Indices as relative indicators are used to evaluate planned indicators, to determine the dynamics of many phenomena and processes. With the help of indexes, it is possible to decompose the generalizing indicator by the factors of relative and absolute deviations

The **graphical method** allows you to illustrate economic processes, calculate a number of indicators directly on the graph, and simultaneously draw up the results of the analysis

**Functional and cost analysis** is a method of systematic study of the functions of an innovative object used for its intended purpose (product, process, structure) in order to minimize costs in the field of design, production, operation and, thereby, increase the beneficial effect per unit of total costs over the life cycle of the object

The following requirements apply to a new product:

- 1) there should be no unnecessary, non-functional elements
- 2) the less funds are needed to perform the main functions of a new product, the closer it is to the ideal
- 3) there should be no harmful functions, the elements of the new object should not contradict each other, they should be interconnected
- 4) the stability of the structure of the new object and the mobility of functions must be ensured

**System analysis** allows for a comprehensive analysis of an innovative object as a system, taking into account a systematic approach. The systematic approach provides dynamic consideration of the whole set of factors influencing the management decision on an innovative project, considers them in mutual connection with external and internal trends in the development of the innovation environment

# Breakthrough innovations

## Example

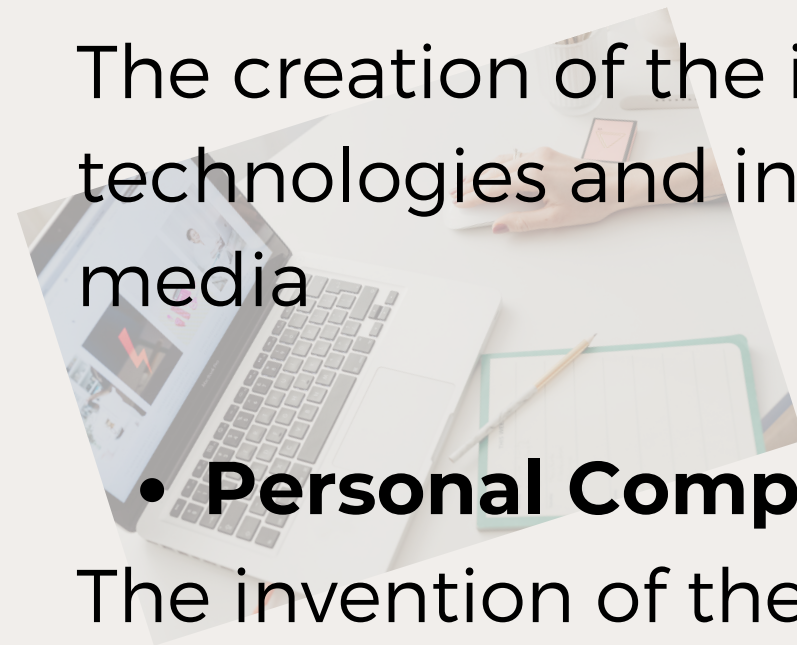
- British Airways was unable to start selling air tickets over the Internet, as this caused serious objections from its distributors - transport agencies.

This circumstance caused a conflict between traditional and innovative ways of doing business



- **The Internet**

The creation of the internet in the 1960s led to the development of numerous technologies and innovations such as email, search engines, e-commerce, and social media



- **Personal Computers**

The invention of the personal computer in the 1970s revolutionized the way we work and communicate. It led to the development of software, hardware, and the internet, making computing accessible to everyone

# Breakthrough innovations

- **Smartphones**

The introduction of smartphones in the late 2000s changed the way we communicate, consume media, and access information. With their advanced features such as touch screens, GPS, and mobile apps, smartphones have become an essential part of our daily lives



- **Genome Editing**

The development of the CRISPR-Cas9 gene editing technology has the potential to revolutionize medicine and agriculture. It allows scientists to modify DNA sequences with unprecedented precision, which could lead to the development of new therapies for genetic diseases and more sustainable agriculture

# Breakthrough innovations

- **Artificial Intelligence**

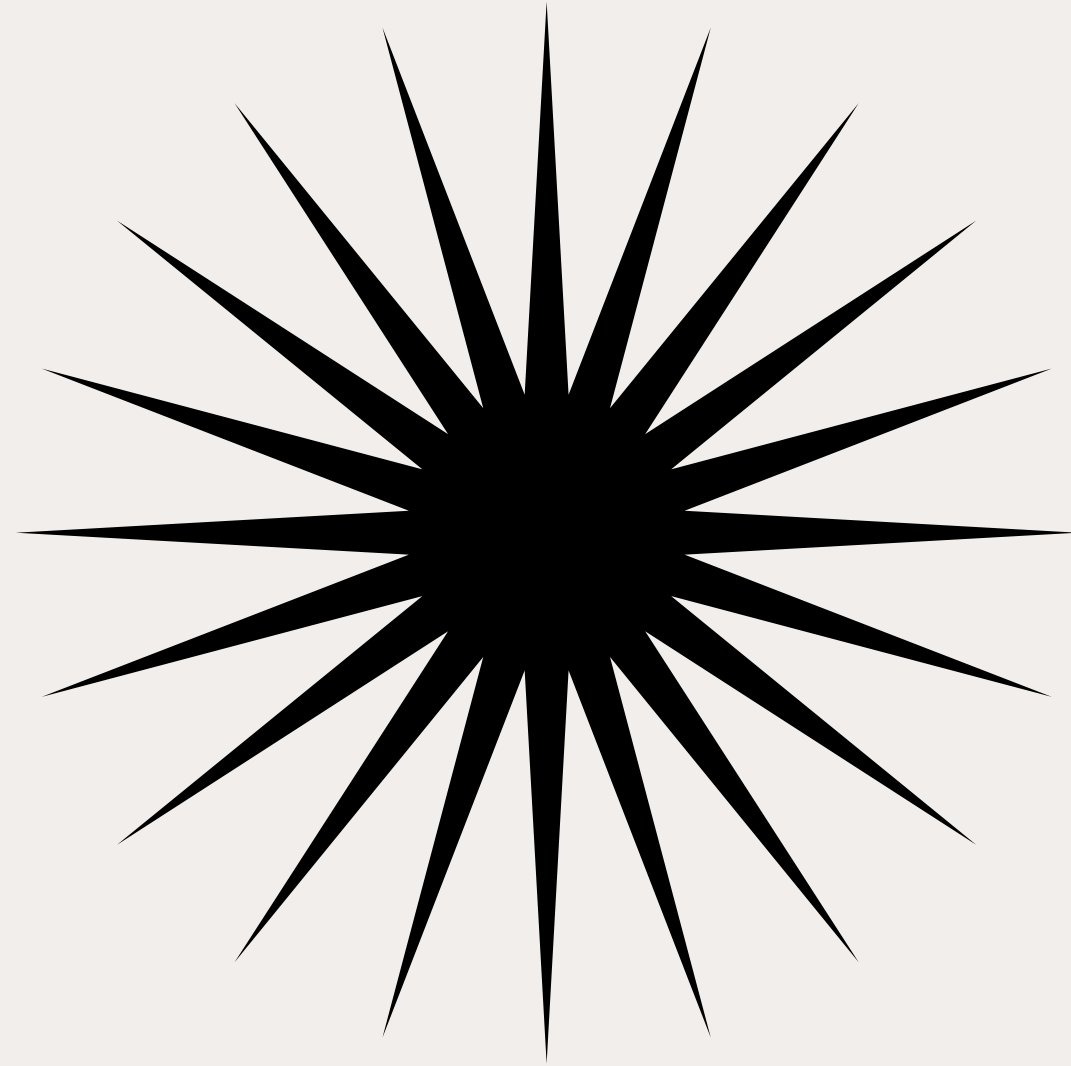
The development of artificial intelligence has led to breakthroughs in fields such as healthcare, finance, and transportation. AI algorithms can analyze vast amounts of data and make predictions or decisions, improving efficiency and accuracy in many industries

- **Renewable Energy**

The development of renewable energy technologies such as wind, solar, and hydro power is helping to reduce dependence on fossil fuels and mitigate climate change. These technologies have advanced significantly in recent years, becoming more efficient and cost-effective.







**Thank you for  
your attention!**