

A decorative graphic consisting of a central blue diamond shape with white Arabic calligraphy. The calligraphy is the Basmala (Bismillah), the opening of many Islamic texts, which reads 'In the name of Allah, the Most Gracious, the Most Merciful'. The diamond is set against a background of horizontal blue and white stripes.

الله الرحمن الرحيم

# **Modified Stage-Gate: A Product Development Process**

# Modified Stage-Gate: A Product Development Process

**Nader Ale Ebrahim, PhD**

BSc (Mech. Eng., Tehran), MSc (Mech. Eng., Tehran), PhD (Tech. Mang., UM)

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Research Support Unit  
Centre of Research Services  
Research Management & Innovation Complex  
University of Malaya, Kuala Lumpur, Malaysia

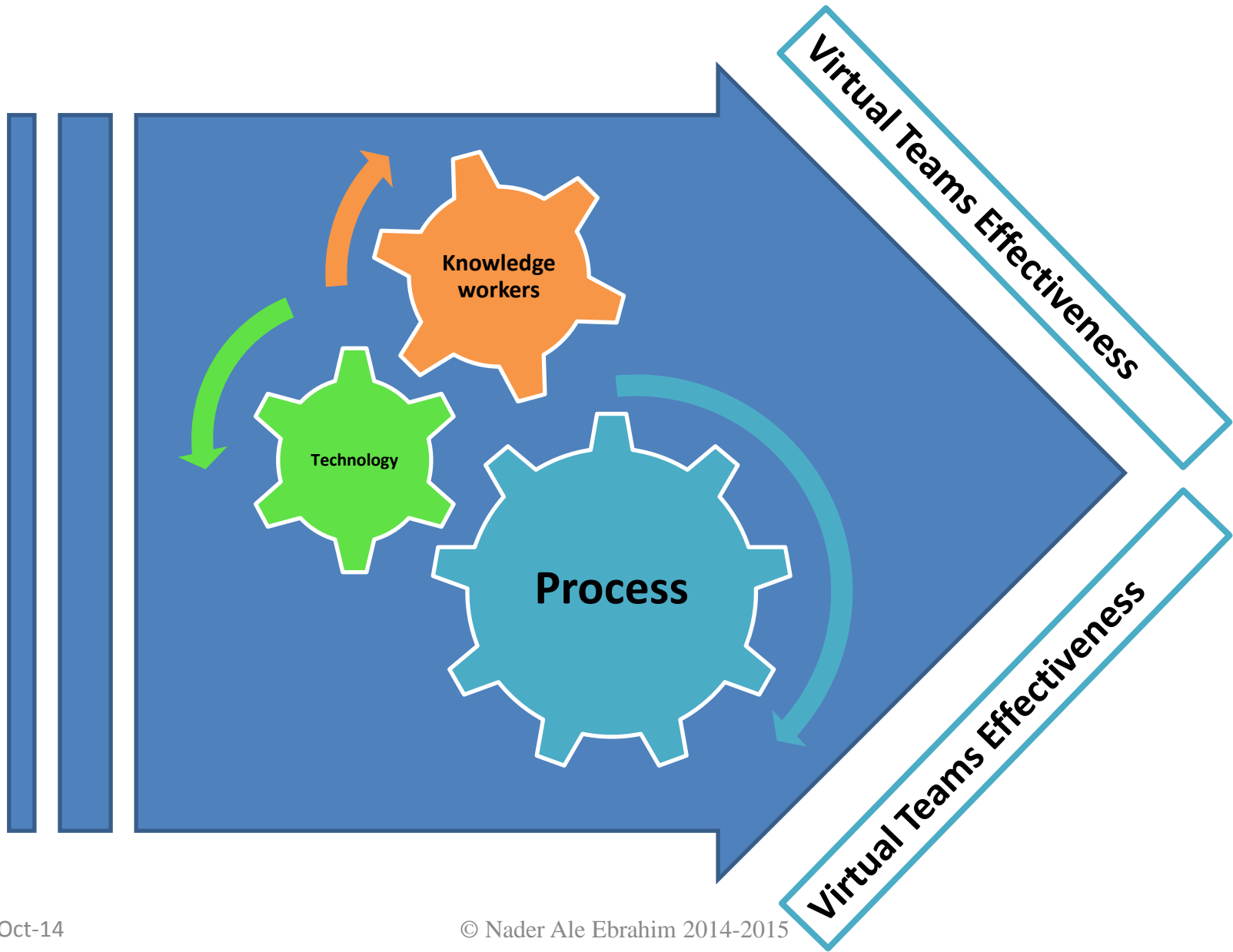
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## **Abstract:**

In today's dynamic marketplace, manufacturing companies are under strong pressure to introduce new products for long-term survival with their competitors. Increased competition and reduced product life cycles put force upon companies to develop new products faster. In response to these pressing needs, there should be some new approach compatible in flexible circumstances. This presentation presents a solution based on the popular Stage-Gate system, which is closely linked with virtual team approach. Virtual teams can provide a platform to advance the knowledge-base in a company and thus to reduce time-to-market. The presentation describes all the major aspects of new product development (NPD), NPD process and its relationship with virtual teams, Stage-Gate system finally presents a modified Stage-Gate system to cope up with the changing needs.



# “Process” Trend



China 100

South Korea 53

India 35

Hong Kong 34

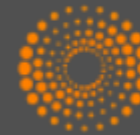
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Singapore 30

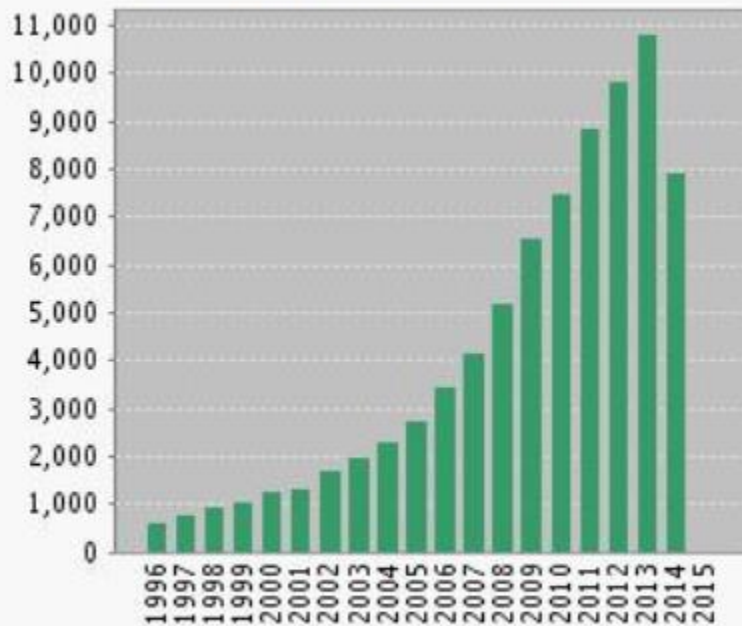
Taiwan 25

**Iran**

Search volume index: **8**



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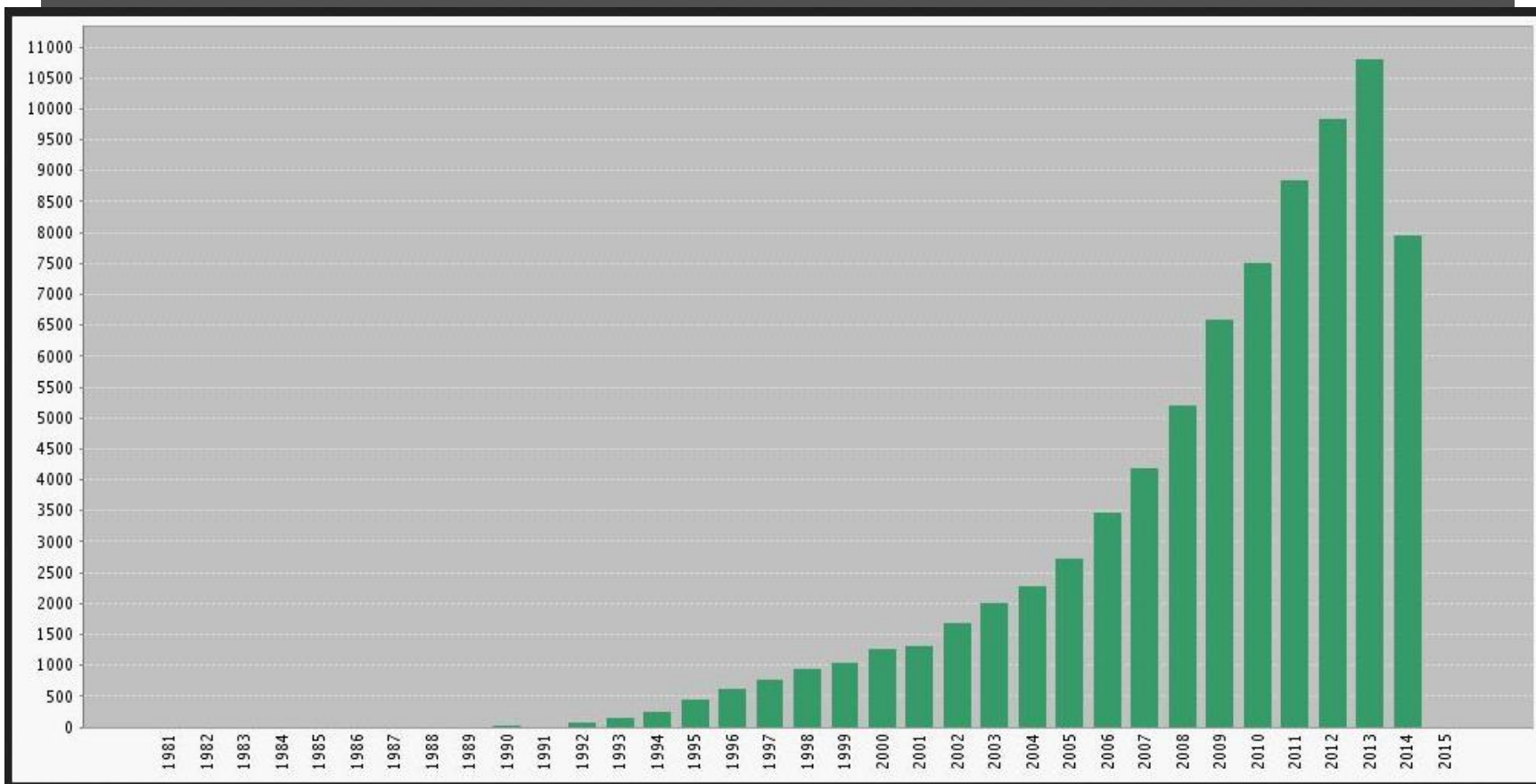
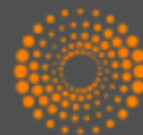
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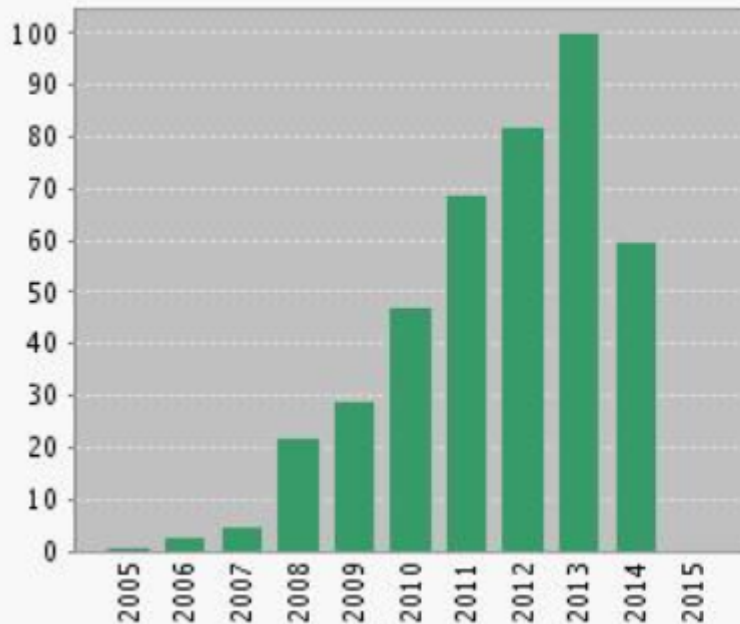
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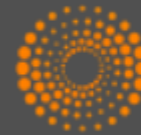
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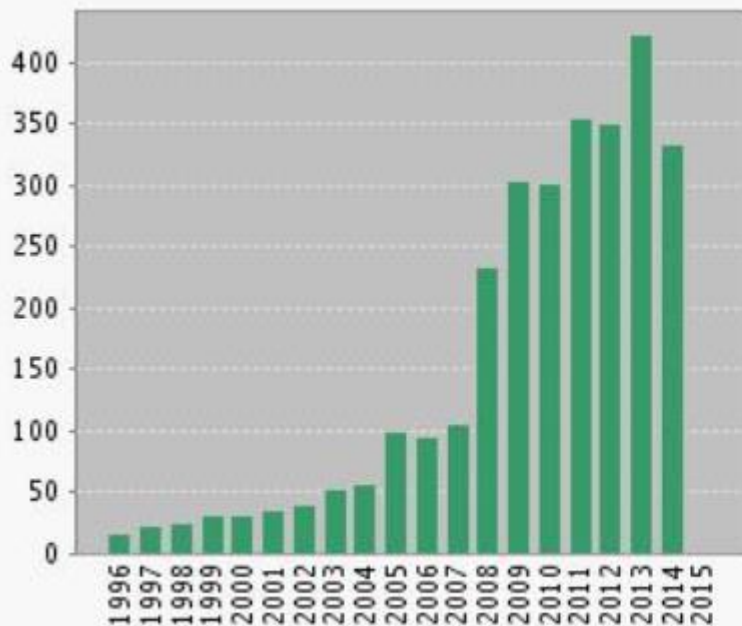
**COUNTRIES/TERRITORIES:** ( **IRAN** )

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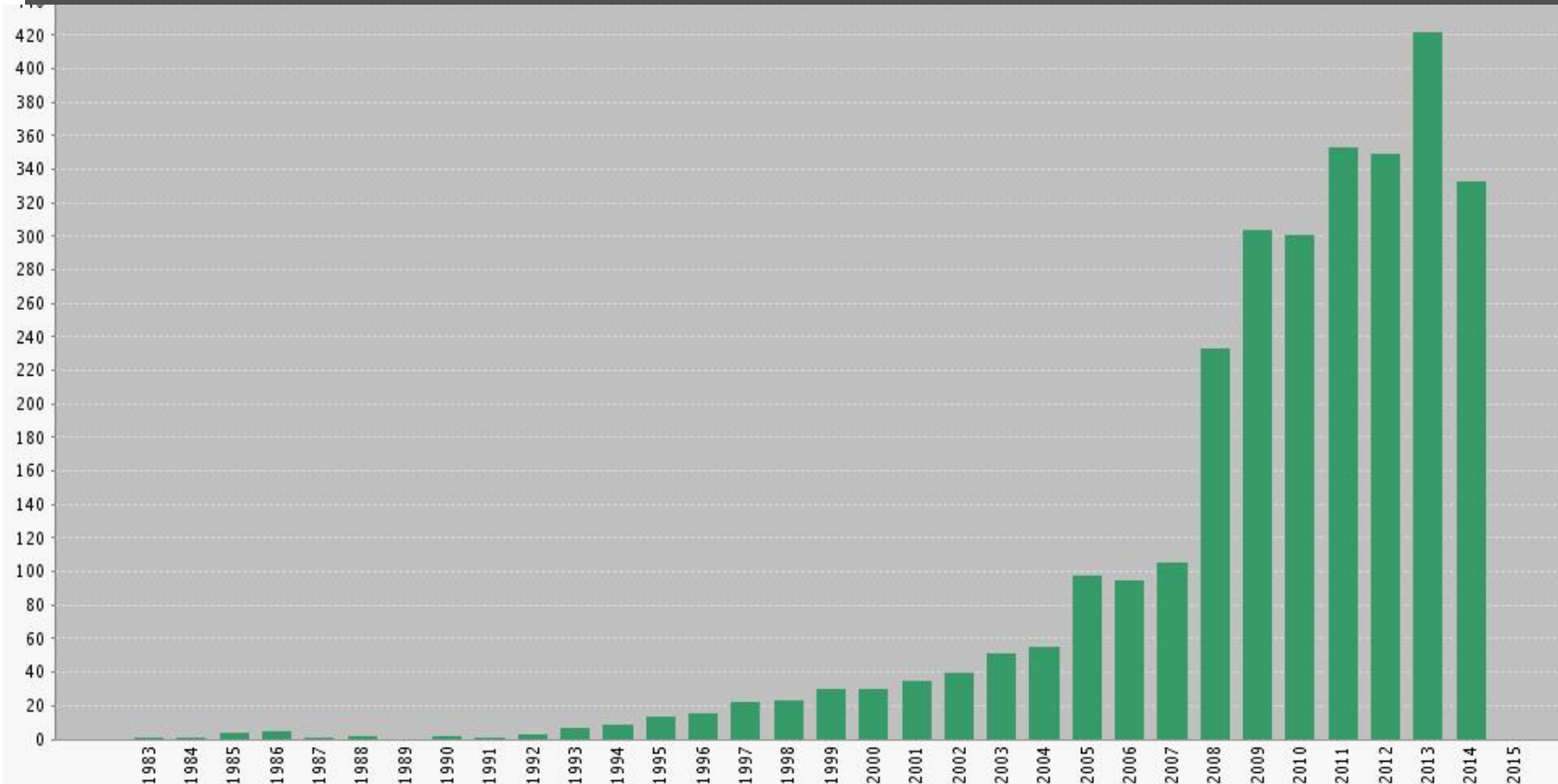
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**COUNTRIES/TERRITORIES:** ( **JAPAN** )

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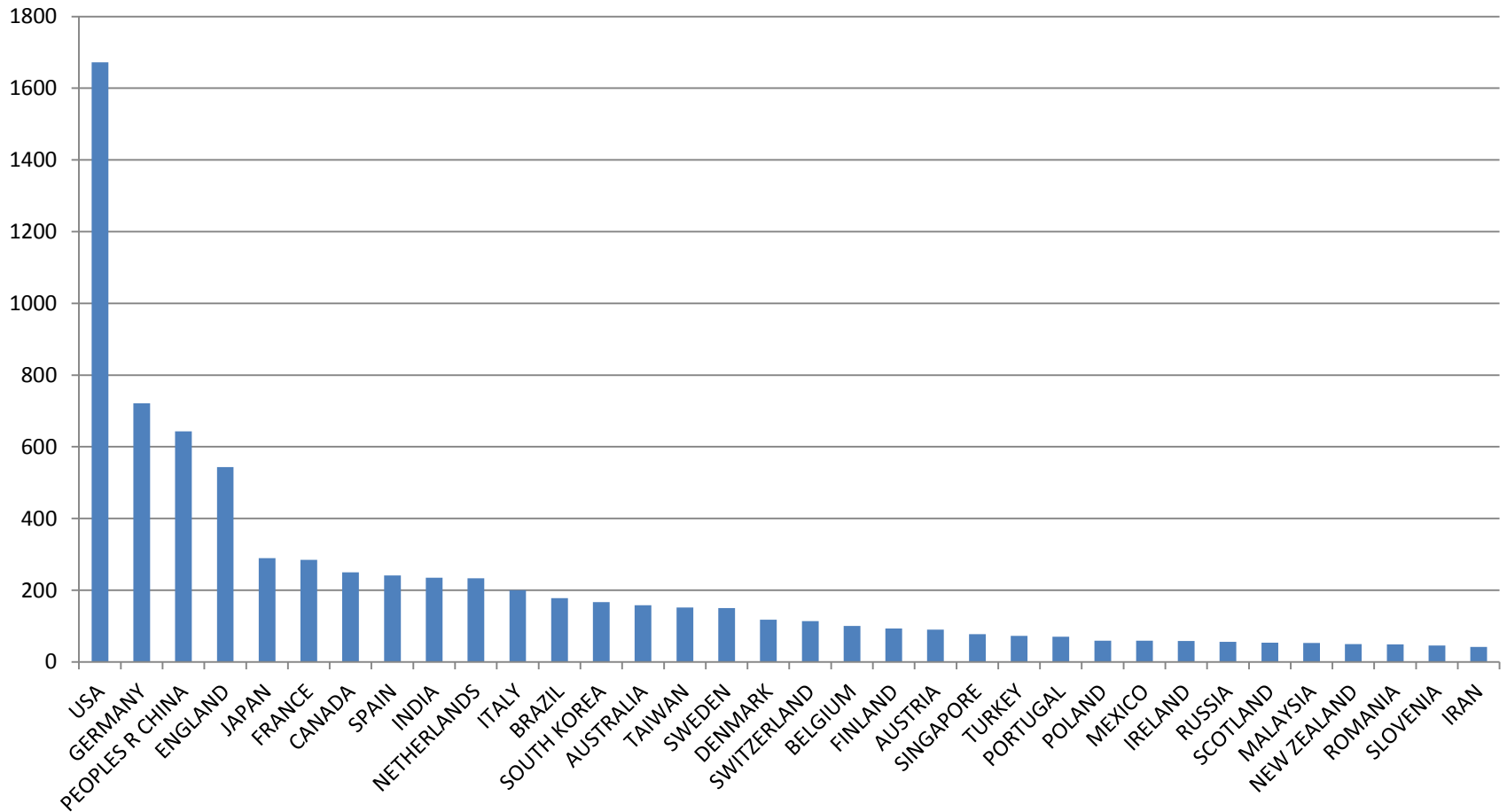
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# New Product Development

Product development definition used by different researchers in slightly different ways but generally it is the process that covers **product design**, **production system design**, **product introduction processes** and **start of production** (Johansen, 2005). A multidisciplinary approach is needed to be successful in launching new products and managing daily operations (Flores, 2006).

# New product Development Process

New product development is a multi-dimensional process and involves multiple activities (Ozer, 2000).

Kusar al. (2004) summarized different stage of new product development which in earlier stages, the objective is to make a preliminary market, business, and technical assessment whereas at the later stages they propose to actually design and develop the product(s).

- Definition of goals (goals of the product development process)
- Feasibility study (term plan, financial plan, pre-calculation, goals of market)
- Development (first draft and structure of the product, first draft of components, product planning and its control processes)
- Design (design of components, drawing of parts, bills of material)

# Stage-Gate System in NPD

Several authors proposed different conceptual models for the NPD process, beginning from the idea screening and ending with the commercial launching. The model of Cooper, called the Stage-Gate System is one of the most widely acknowledged systems (Rejeb et al., 2008).

# Stage-Gate System in NPD

The Stage-Gate System model divides the NPD into discrete stages, typically five stages. Each Stage gathers a set of activities to be done by a multifunctional project team. To enter into each stage, some conditions and criteria have to be fulfilled. They are specified in the Gates. A Gate is a project review in which all the information is confronted by the whole team.



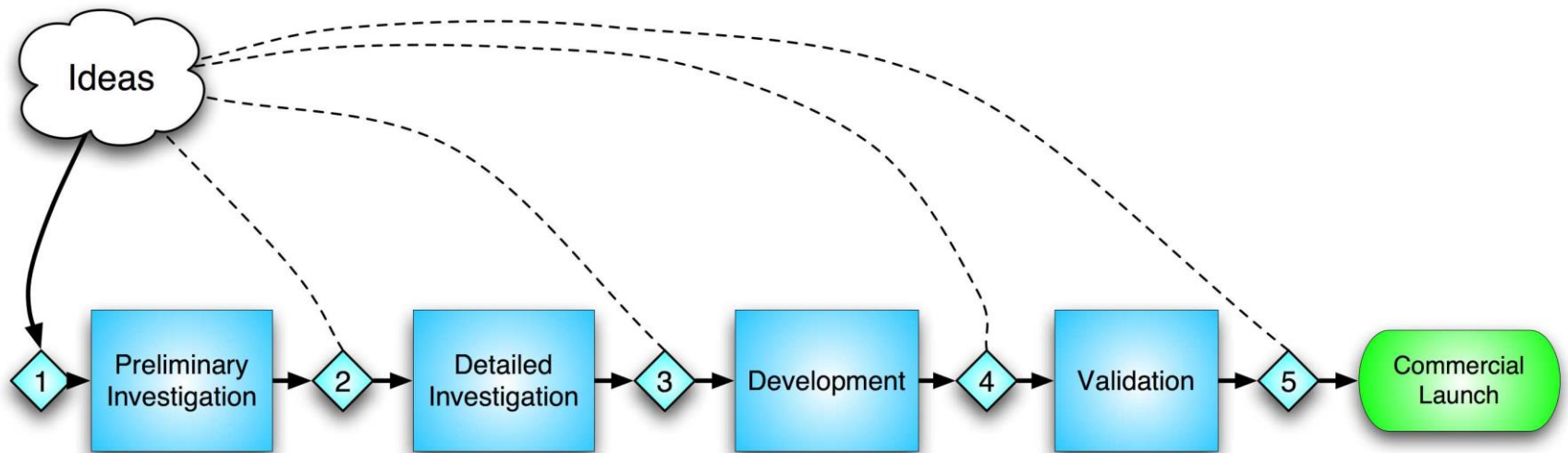
# Stage-Gate System in NPD

This process is a method of managing the new product development process to increase the probability of launching new products quickly and successfully. The process provides a blueprint to move projects through the various stages of development: 1) idea generation, 2) preliminary investigation, 3) business case preparation, 4) product development, 5) product testing, and 6) product introduction. This process is used by such companies as IBM, Procter & Gamble, 3M, General Motors, and others.

# Work in Stages, Review at Gates

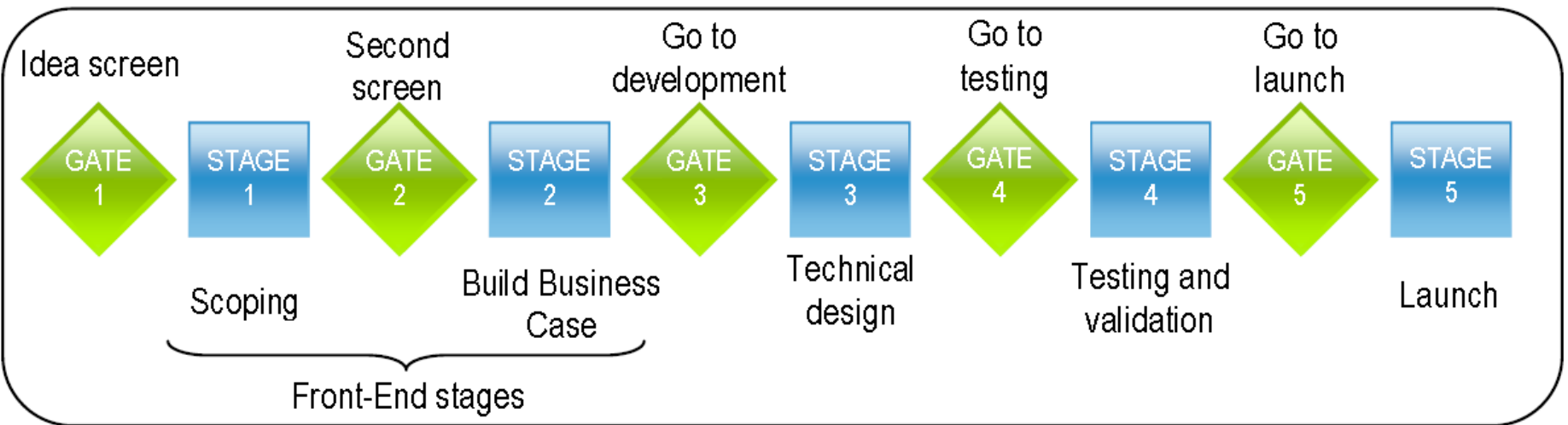
A management framework first described ~1985

Originally proposed by Robert Cooper (Winning at New Products) as a model for product development projects to reduce costs and time to market

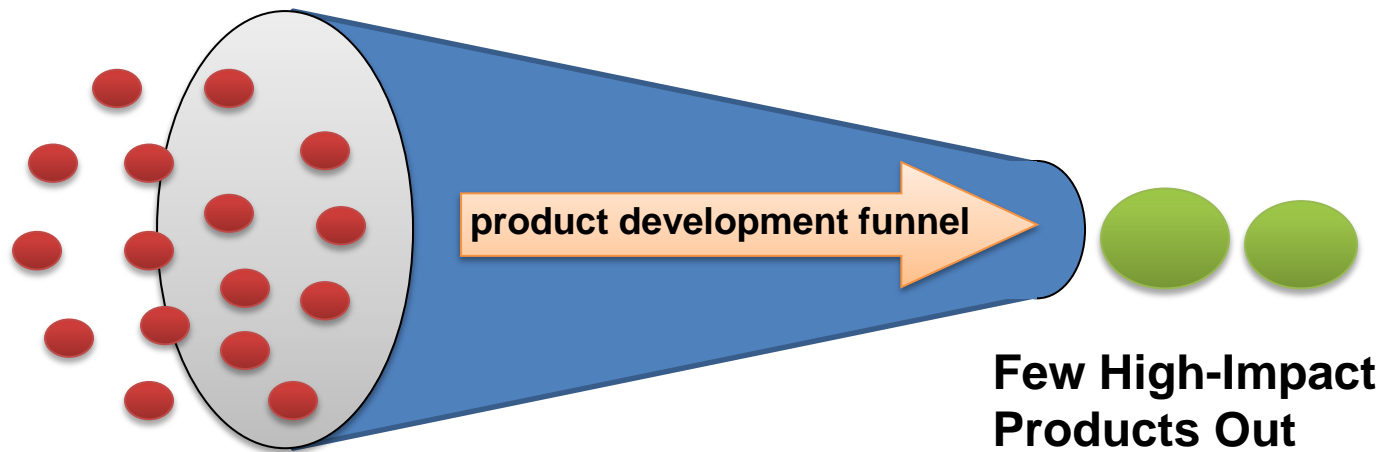


Source: Cynthia J. Riley, **Stage Gate Management Process and Expectations**, August 9, 2005

# The Stage-Gate System (source: Cooper, 2006)



**Many Small  
Projects In**



# THE STAGES

Source: Cooper, R. G. (2000). Doing it right - winning with new products. Ivey Business Journal, 64(6), 54-60.

Stages are where the action occurs.

**Stage 1 Scoping:** a quick investigation and sculpting of the project.

**Stage 2 Build the business case:** the detailed homework and up-front investigation work leading to a business case; a defined product, a business justification and a detailed plan of action for the next stages.

**Stage 3 Development:** the actual design and development of the new product. Additionally, the manufacturing (or operations) process is mapped out, the marketing launch and operating plans are developed, and the test plans for the next stage are defined.

**Stage 4 Testing & validation:** the verification and validation of the proposed new product, its marketing and production.

**Stage 5 Launch:** full commercialization of the product— the beginning of full production and commercial launch and selling.

# THE GATES

Preceding each stage is an entry gate or a Go/Kill decision point. Effective gates are central to the success of a fast-paced, new-product process:

- Gates serve as quality-control checkpoints: Is this project being executed in a quality fashion?
- Gates also serve as Go/Kill and prioritization decision points: Gates provide the funnels where mediocre projects are successively culled out.
- Finally, gates are where the path forward for the next stage is decided, along with resource commitments. Gate meetings are usually staffed by senior managers from different functions, who own the resources the project leader and team require for the next stage. These decision-makers are called “gatekeepers.”

Gates have a common format:

- **Deliverables:** These are the inputs into the gate review— what the project leader and team deliver to the meeting. They are the results of the actions of the previous stage, and are based on a standard menu of deliverables for each gate.
- **Criteria:** These are questions or metrics on which the project is judged in order to make the Go/Kill and prioritization decision.
- **Outputs:** These are the results of the gate review—a decision (Go/Kill/Hold/Recycle). An action plan is approved, and the date and deliverables for the next gate are agreed upon.

## **Gate 1 Idea Screen**

Does the idea merit any work?

## **Stage 1 Preliminary Investigation**

Prelim market assessment

Prelim technical assessment

Prelim financial & business assessment

Action plan for Stage 2

## **Gate 2 Second Screen**

Does the idea justify extensive investigation?

## **Stage 2 Detailed Investigation**

User needs & wants study

Competitive analysis

Value proposition defined

Technical feasibility assessment

Operations assessment

Product Definition

Financial analysis

**Gate 3 Decision to Develop**

Is the business case sound?

**Stage 3 Development**

Technical development work

Rapid prototypes

Initial customer feedback

Prototype development

In-house product testing

Operations process development

Full launch & operations plans

**Gate 4 Decision to Test**

Should the project be moved to external testing?

**Stage 4 Testing & Validation**

Extend in-house testing

Customer field trials

Acquisition of production equipment

Production/operation trials

Test market/trial sell

Finalized launch and operations plans

Post-launch & life cycle plans



## **Gate 5 Decision to Launch**

Is the product ready for commercial launch?

## **Stage 5 Launch**

Market launch & roll-out

Full production/operations

Selling begin

Results monitoring

Post-Launch & life cycle plans under way

## **Post-Launch Review**

How did we do vs. projections?

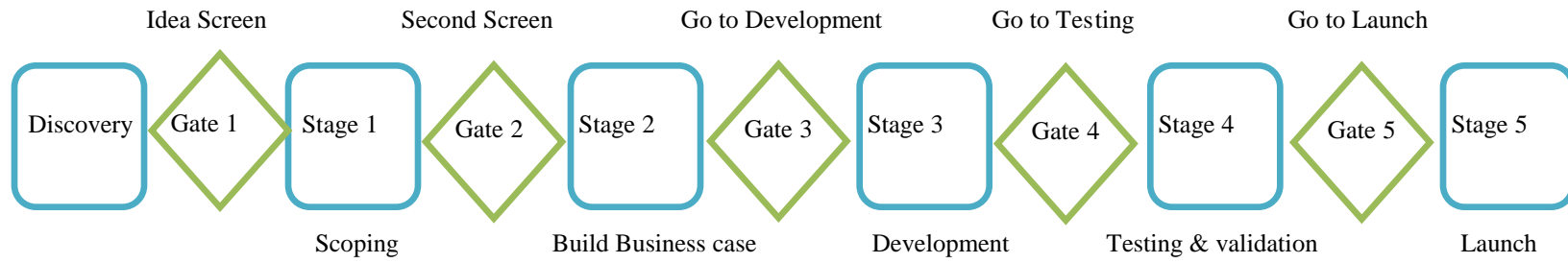
What did we learn?

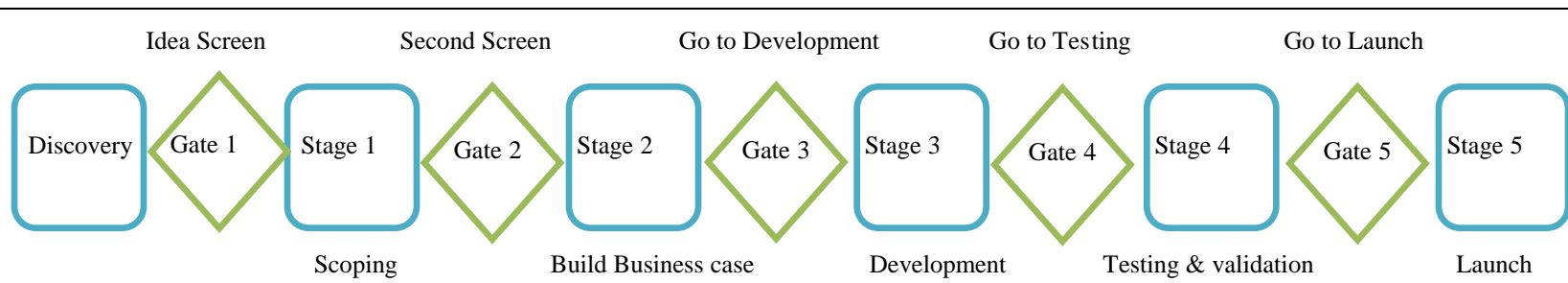
# Modified Stage-Gate: A Conceptual Model of Virtual Product Development Process

**Source:** Ale Ebrahim, N., Ahmed, S., & Taha, Z. (2009). Modified Stage-Gate: A Conceptual Model of Virtual Product Development Process. [Review]. *African Journal of Marketing Management*, 1(9), 211-219.

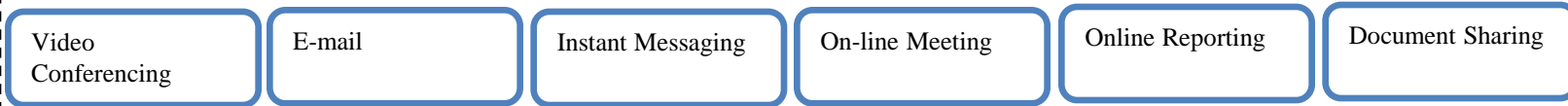
# Modified Stage-Gate

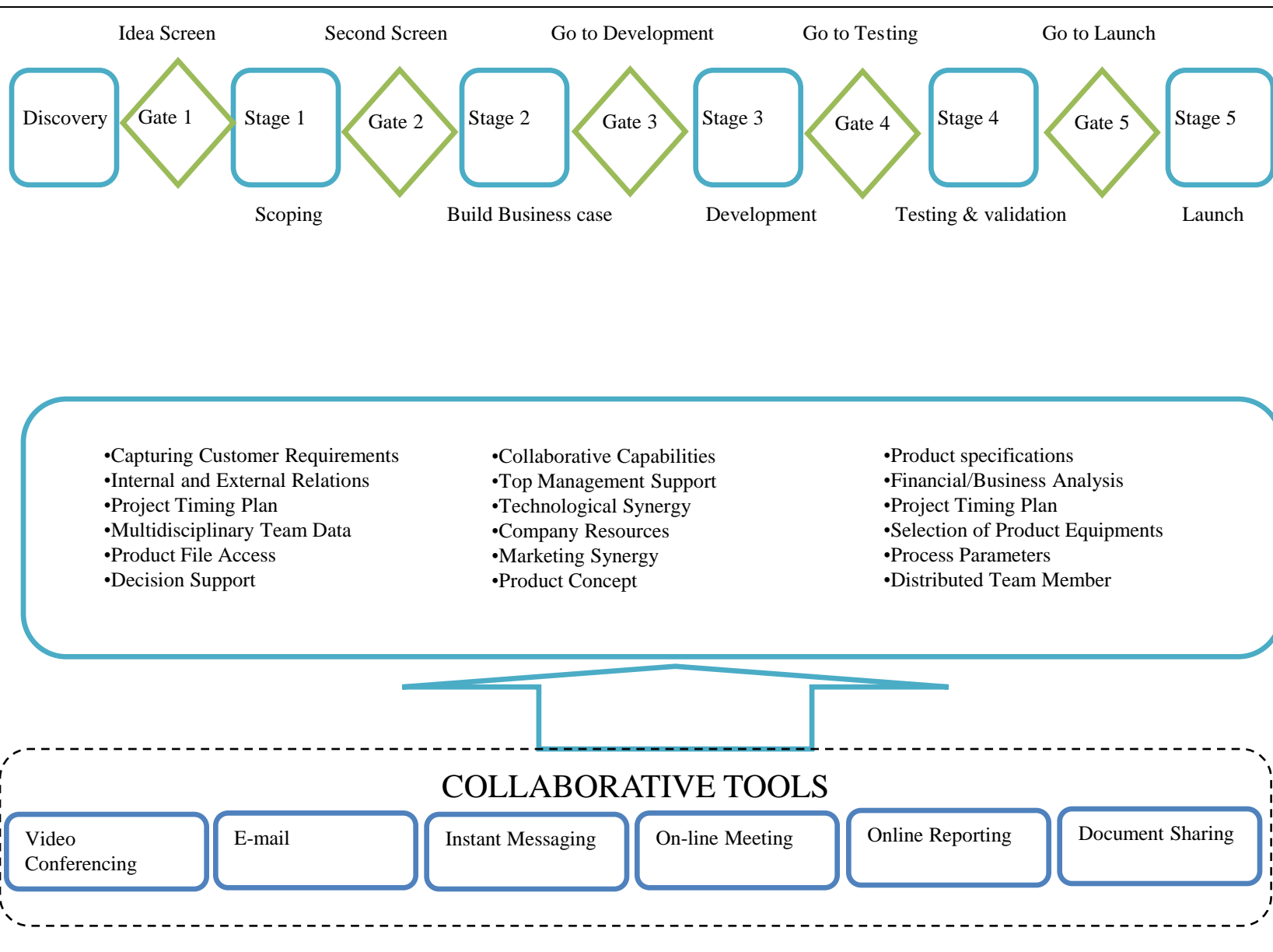
The architecture is structured in a two-layered framework: Traditional Stage-Gate system and collaborative tool layer which is supported by virtual team. Merge of Stage-gate system with virtual product development team lead to increase new product performance and decrease time-to-market. The following sections will describe some elements of the collaborative tool layer in more detail.

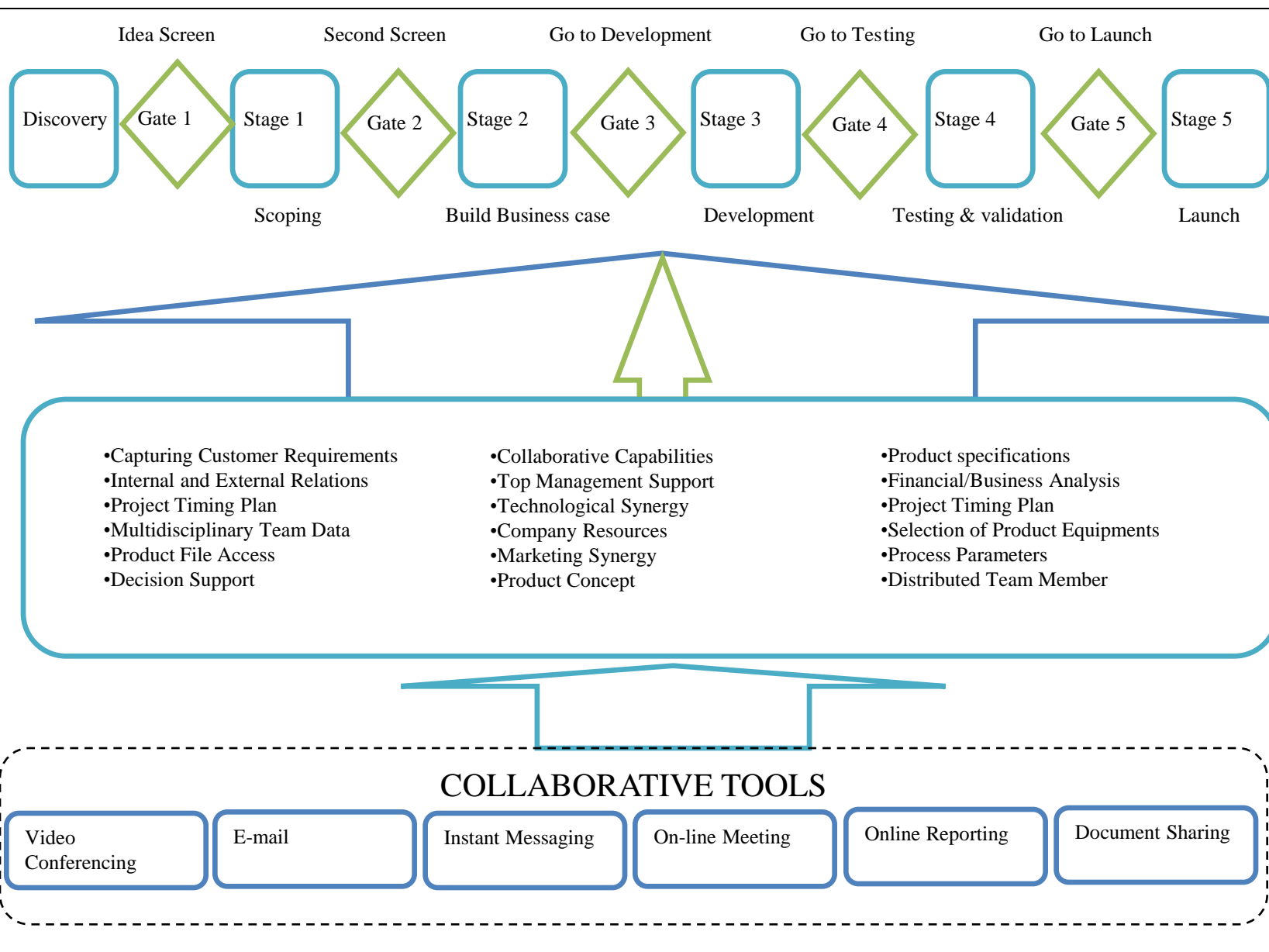




### COLLABORATIVE TOOLS

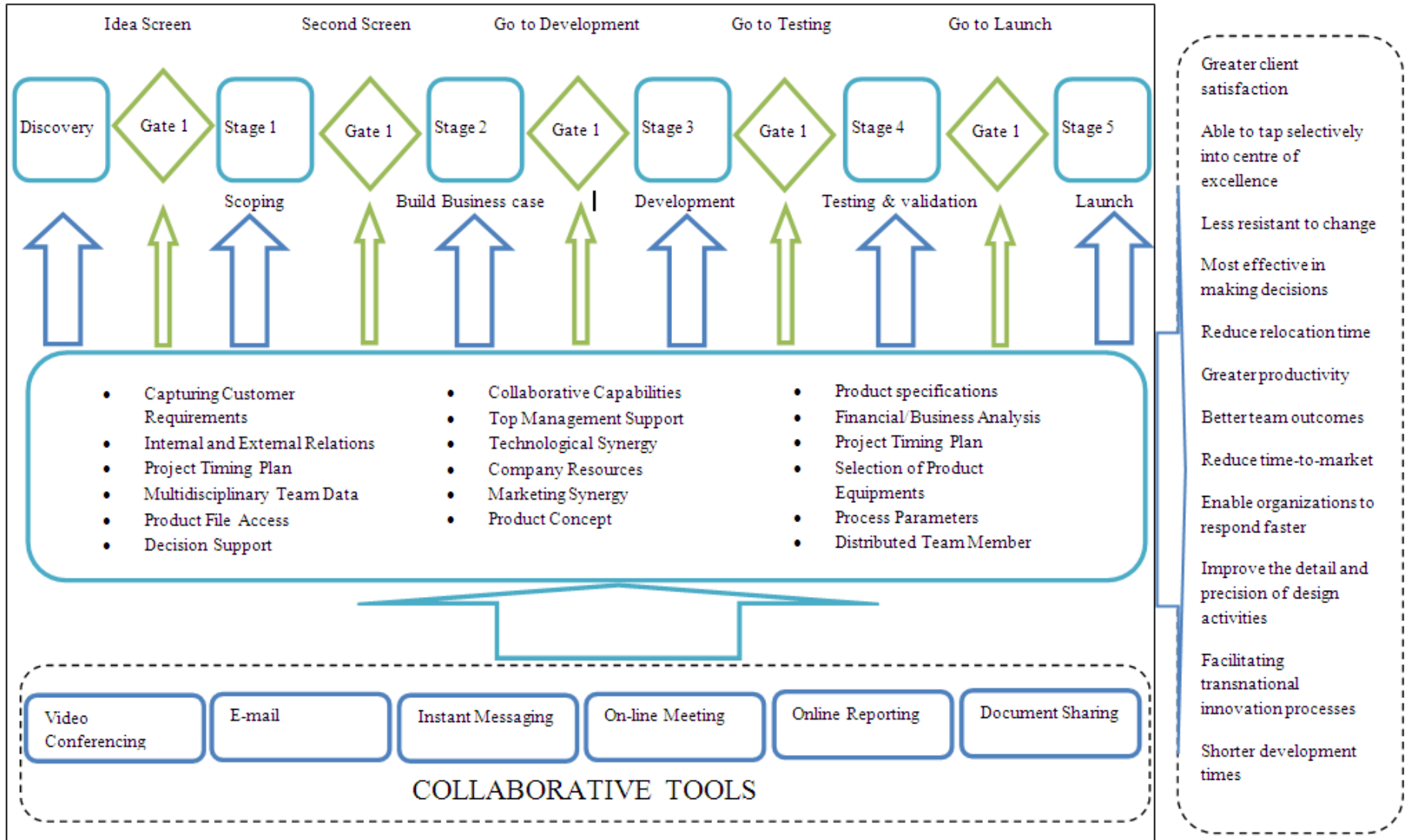






- Greater client satisfaction
- Able to tap selectively into centre of excellence
- Less resistant to change
- Most effective in making decisions
- Reduce relocation time
- Greater productivity
- Better team outcomes
- Reduce time-to-market
- Enable organizations to respond faster
- Improve the detail and precision of design activities
- Facilitating transnational innovation processes
- Shorter development times

# Modified Stage-Gate

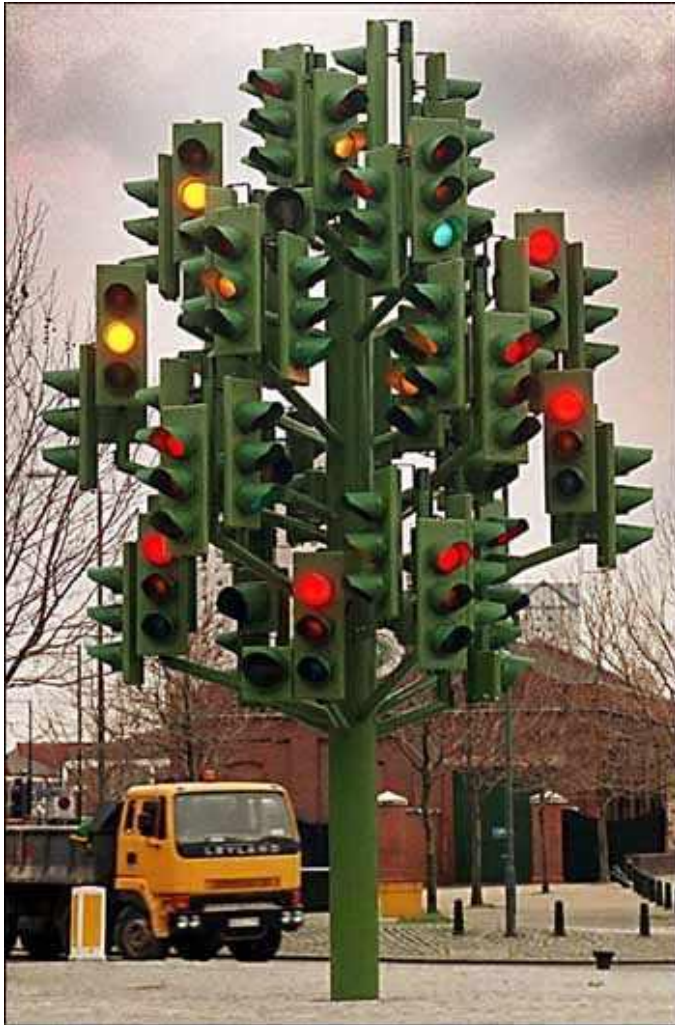




# Conclusion:

The modified Stage-Gate system has demonstrated to be a good development platform for the NPD. In order to integrate and share the information and knowledge available within geographically distributed companies, this model can be a reference model.





# Thank you!

**Nader Ale Ebrahim, PhD**

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<http://scholar.google.com/citations>

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- [9] N. Ale Ebrahim, S. Ahmed, S. H. Abdul Rashid, and Z. Taha, "Technology Use in the Virtual R&D Teams," *American Journal of Engineering and Applied Sciences*, vol. 5, no. 1, pp. 9-14, January 31, 2012.