澳 門 理 工 學 院
Instituto Politécnico de Macau
Macao Polytechnic Institute

COMP223: Software Engineering

Software Development Process Practice

Dr. Kim, Song-Kyoo (Amang)
Associate Professor,

Computer Science Program
MACAO POLYTECHNIC INSTITUTE
Macau, SAR

Session Objectives

- Understand various Software Development Process (SDP) in practice.
- Analyze software development processes from various real-world cases.
- Adapting the proper SDP into their own software development activities.

澳 門 理 工 學 院
Instituto Politécnico de Macau
Macao Polytechnic Institute

Nature of Software Development

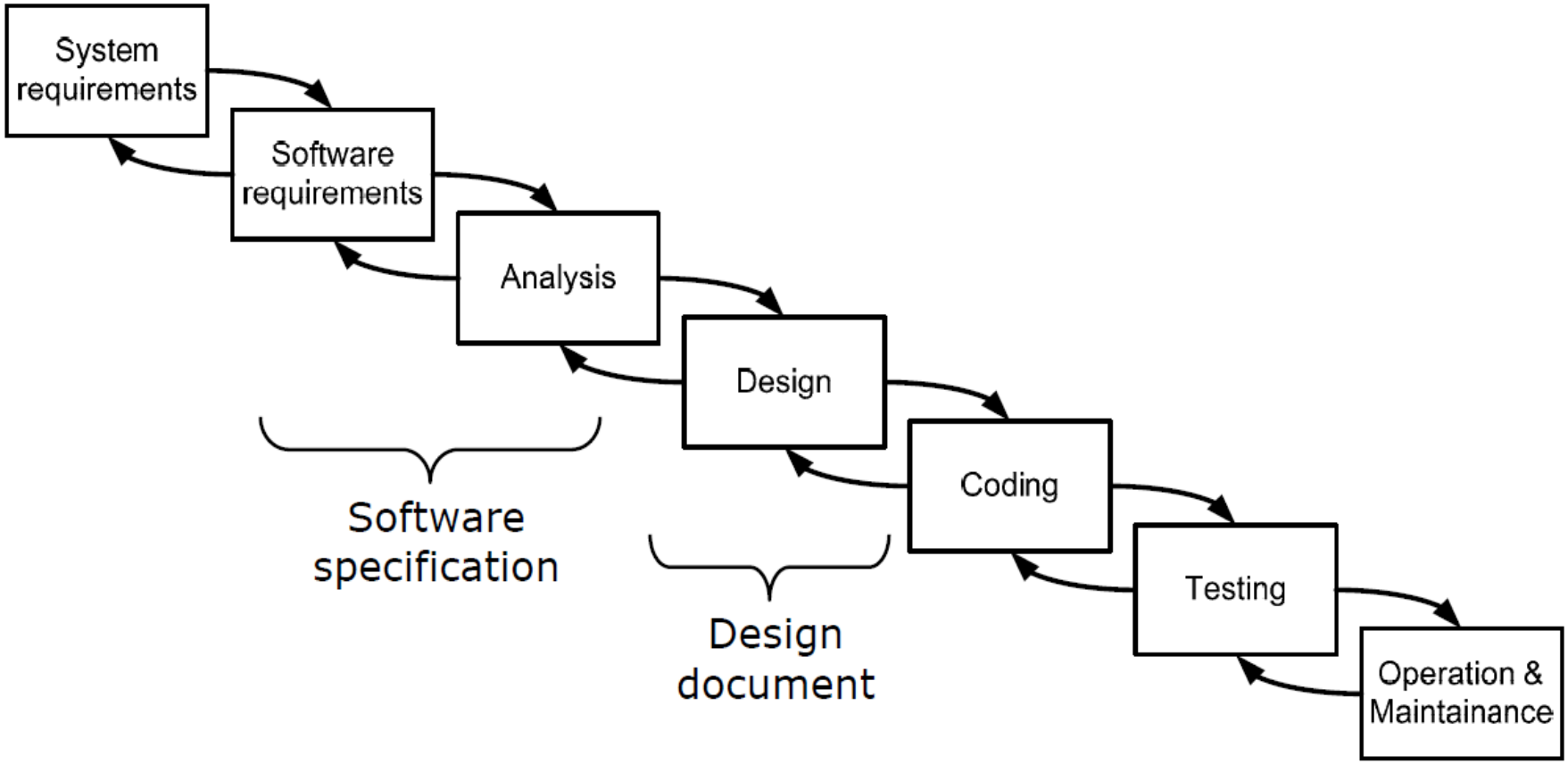
SW Development Process Model (1/5)

- Classical Development Models:
  - Waterfall model.
  - V-Model.
  - Incremental Process Models.

- Modern Development Models (Agile):
  - eXtreme Programming (XP).
  - Proto-type development.
  - Test-driven development (TDD).
  - Agile Modeling (AM).
  - Scrum.

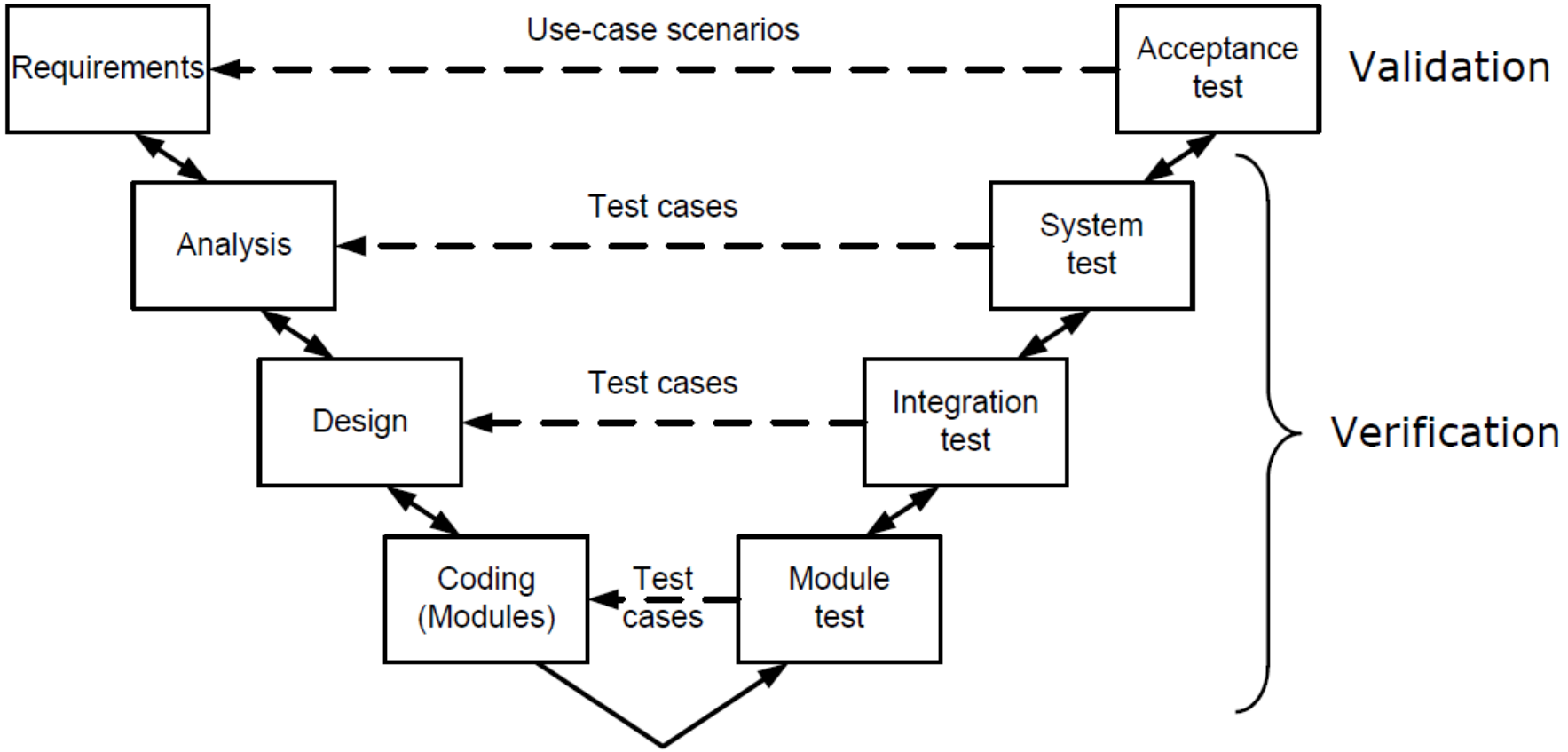
SW Development Process Model (2/5)

- Waterfall Model



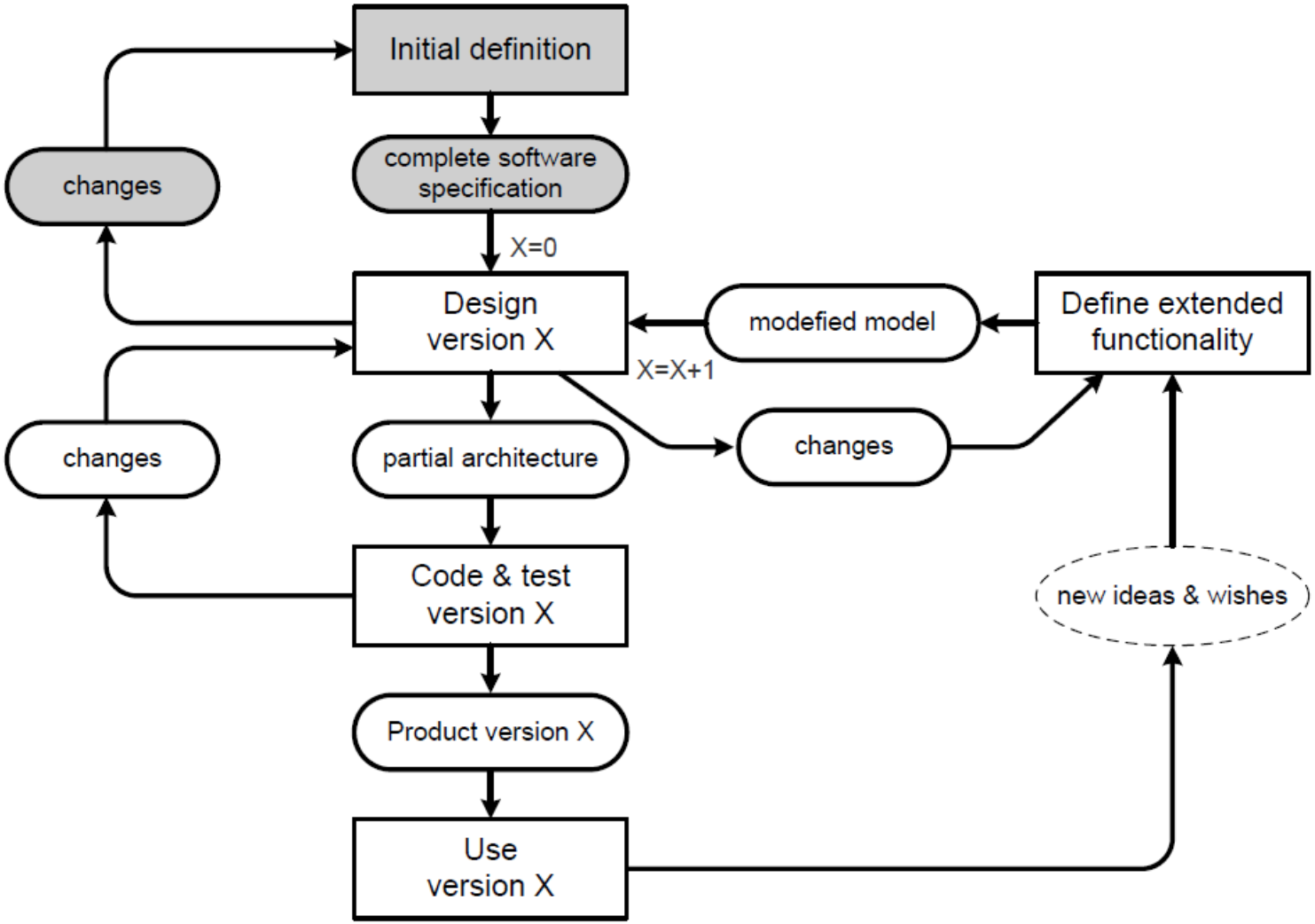
SW Development Process Model (3/5)

- V-Model



SW Development Process Model (4/5)

- Incremental Process Model



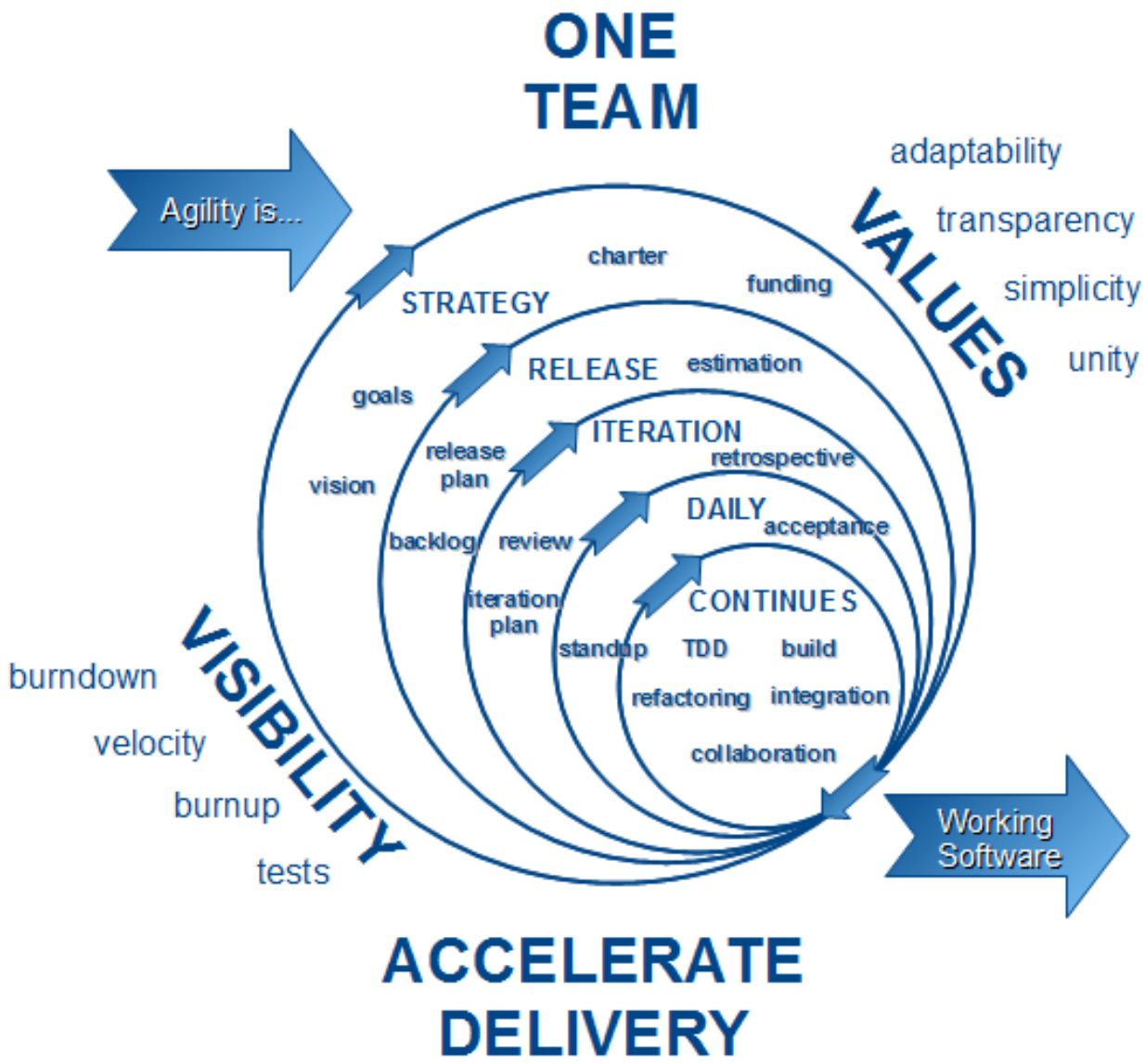
SW Development Process Model (5/5)

- Overall summary of classical process
  - Problem of classical process models:
    - Successive steps.
    - Document oriented.
    - Limited customers/users involvement.
    - Changing requirements in the real world.
  - Advantages:
    - Customer gets a defined process at the beginning of a project.
    - Can be good for large project-based development.
    - Customers can expect high-quality software.
  - Disadvantages:
    - Hard to think of all requirements at the beginning.
    - Documentation seems more important than implementation.

Agile Development Process (1/4)

- Agile Development Process:
  - Uses iterative development as a basis, but advocates a lighter and more people-centric viewpoint than traditional approaches.
  - Practices for every-day development required:
    - Focus on small and medium-sized software project (small teams).
    - Progressing, not spending too much time on design and specifications that might be useless.
  - Agility:
    - Adaptable instead of predictable → Light-weight methodology.
    - Minimizing risk by short-term focus (1-8 weeks):
      - Being able to release a product after each cycle to customers.

Agile Development Process (2/4)



Agile Development Process (3/4)

- Tools of Agile Process:

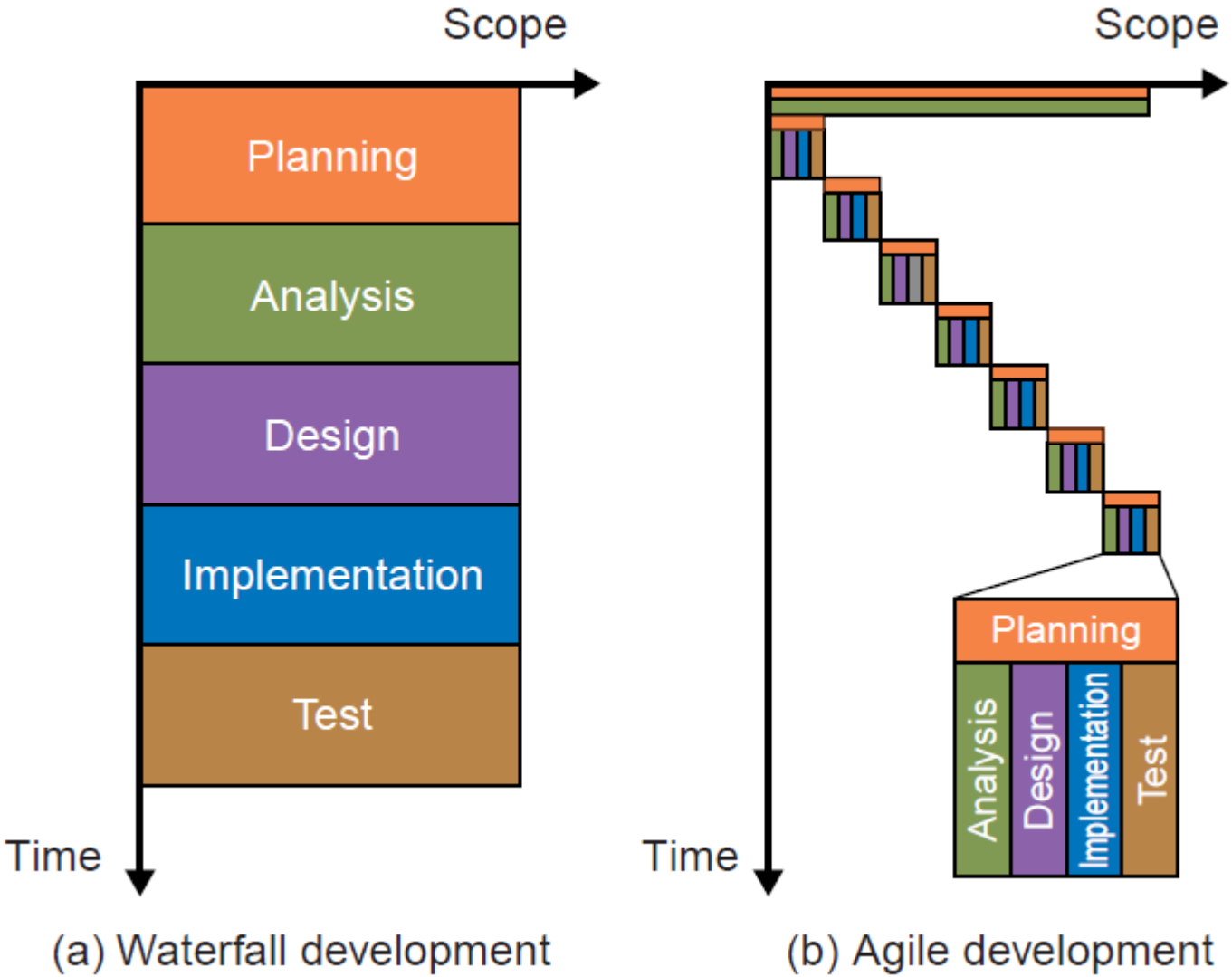
Pros and cons of RAD and Agile methodics:

Name	Pros	Cons
Agile	Minimizes feature creep by developing in short intervals resulting in miniature software projects and releasing the product in mini-increments.	Short iteration may add too little functionality, leading to significant delays in final iterations. Since Agile emphasizes real-time communication (preferably face-to-face), using it is problematic for large multi-team distributed system development. Agile methods produce very little written documentation and require a significant amount of post-project documentation.
Extreme	Lowers the cost of changes through quick spirals of new requirements. Most design activity occurs incrementally and on the fly.	Programmers must work in pairs, which is difficult for some people. No up-front "detailed design" occurs, which can result in more redesign effort in the long term. The business champion[*clarification needed*] attached to the project full-time can potentially become a single point of failure for the project and a major source of stress for a team.
Joint application	Captures the voice of the customer by involving them in the design and development of the application through a series of collaborative workshops called JAD sessions.	The client may create an unrealistic product vision and request extensive gold-plating, leading a team to over- or underdevelop functionality.
Lean	Creates minimalist solutions (i.e., needs determine technology) and delivers less functionality earlier; per the policy that 80% today is better than 100% tomorrow.	Product may lose its competitive edge because of insufficient core functionality and may exhibit poor overall quality.
RAD	Promotes strong collaborative atmosphere and dynamic gathering of requirements. Business owner actively participates in prototyping, writing test cases and performing unit testing.	Dependence on strong cohesive teams and individual commitment to the project. Decision-making relies on the feature functionality team and a communal decision-making process with lesser degree of centralized project management and engineering authority.
Scrum	Agile framework. Improved productivity in teams previously paralyzed by heavy "process", ability to prioritize work, use of backlog for completing items in a series of short iterations or sprints, daily measured progress and communications.	Reliance on facilitation by a master who may lack the political skills to remove impediments and deliver the sprint goal. Due to reliance on self-organizing teams and rejection of traditional centralized "process control", internal power struggles can paralyze a team.

Agile Development Process (4/4)

People and communication	over	Process and Tools
Working game	over	Design documentation
Customer collaboration	over	Contract negotiation
Responding to change	over	Following a plan

Classical vs. Agile (1/2)



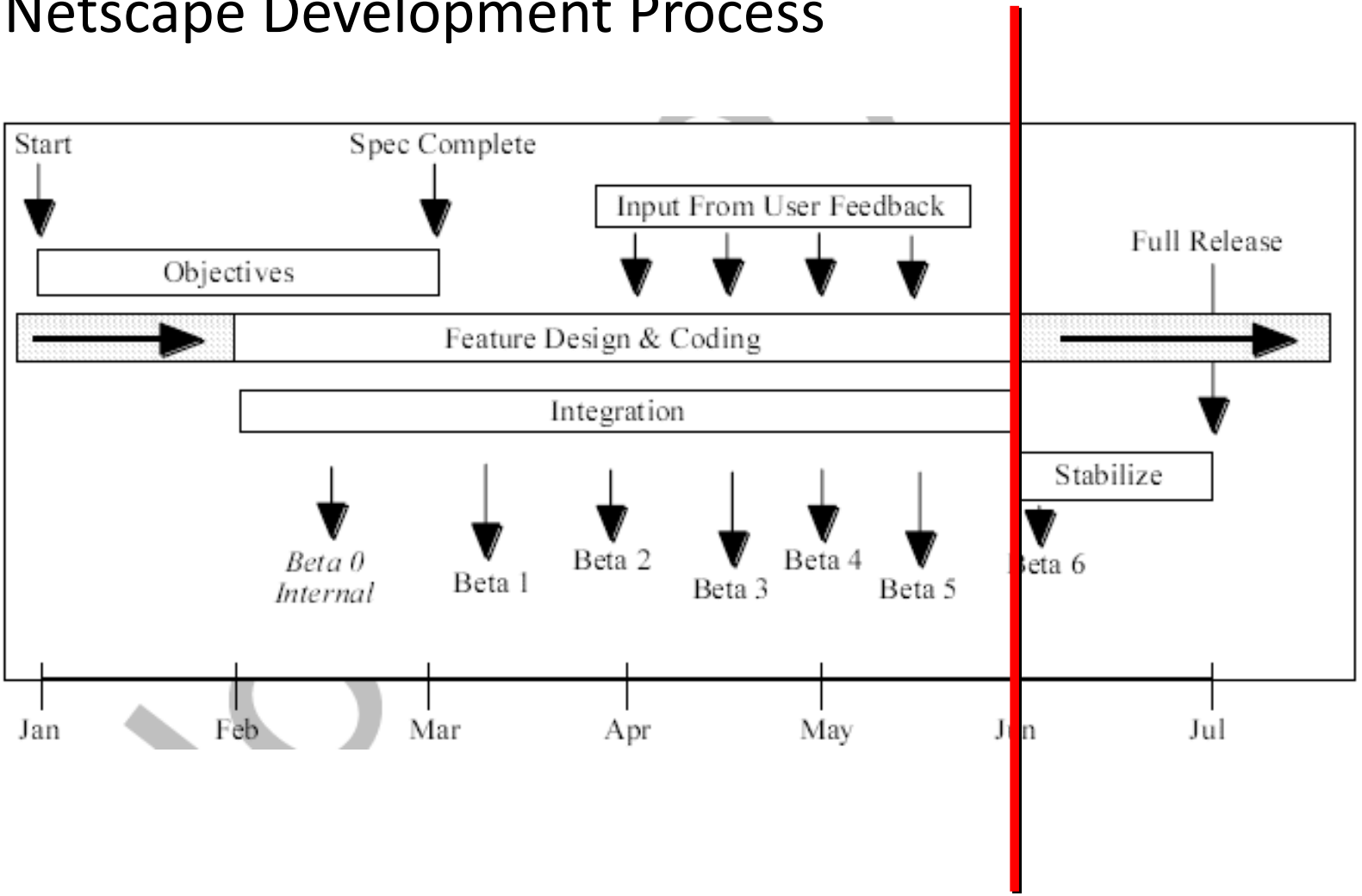
Classical vs. Agile (2/2)

- Classical Process (anticipating):
  - Disciplined, detailed plan.
  - Emphasis on long-term planning.
  - Focus on Process.
  - Plan driven method.

- Agile Process (adaptive):
  - Compromise between none and too much process.
  - Short-term focus.
  - Less documentation, code is documentation.
  - Focus on Humans.
  - Agile.

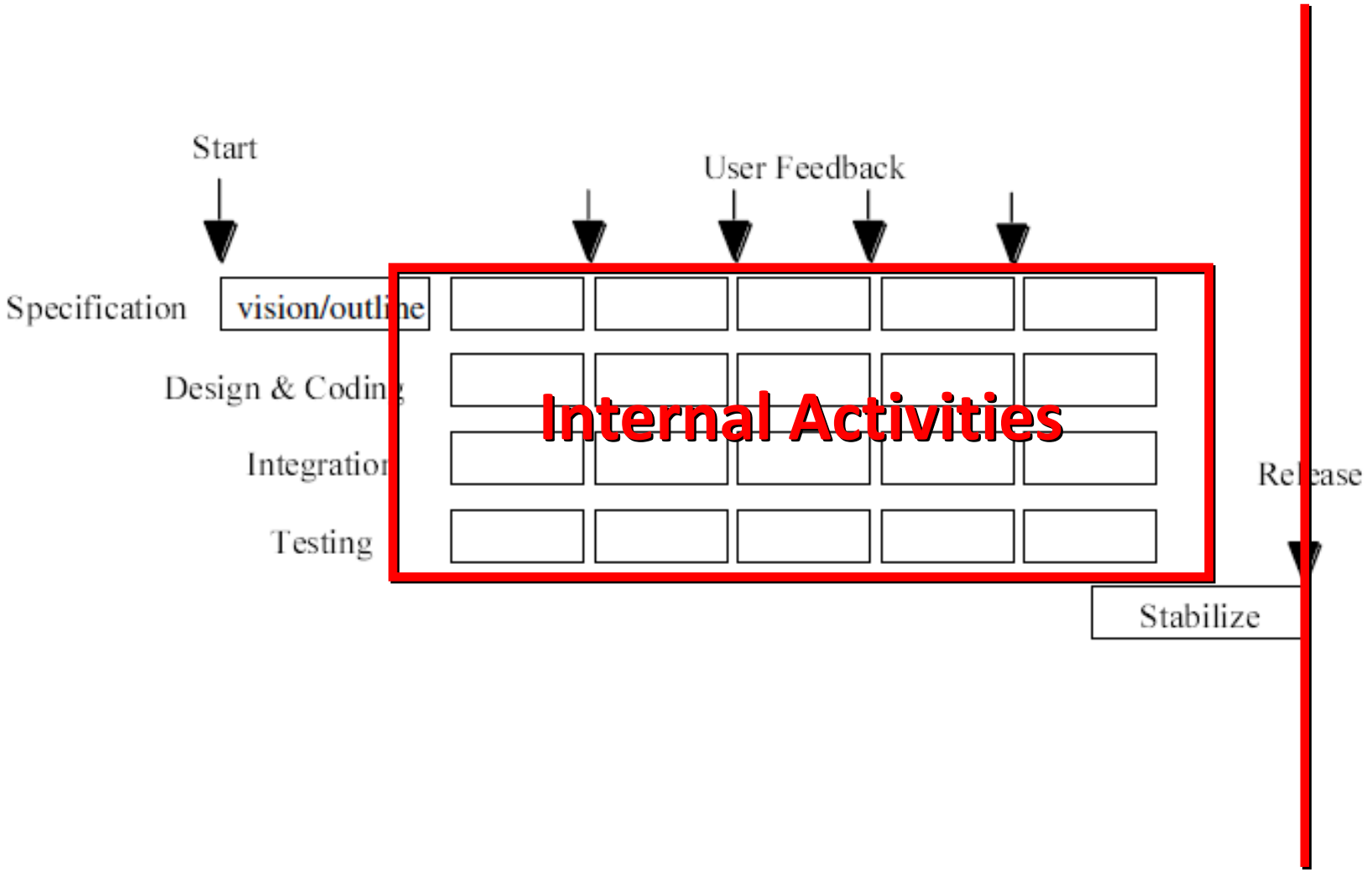
SW Development Cases (1/2)

- Netscape Development Process



SW Development Cases (2/2)

- Outline of MS Development Process

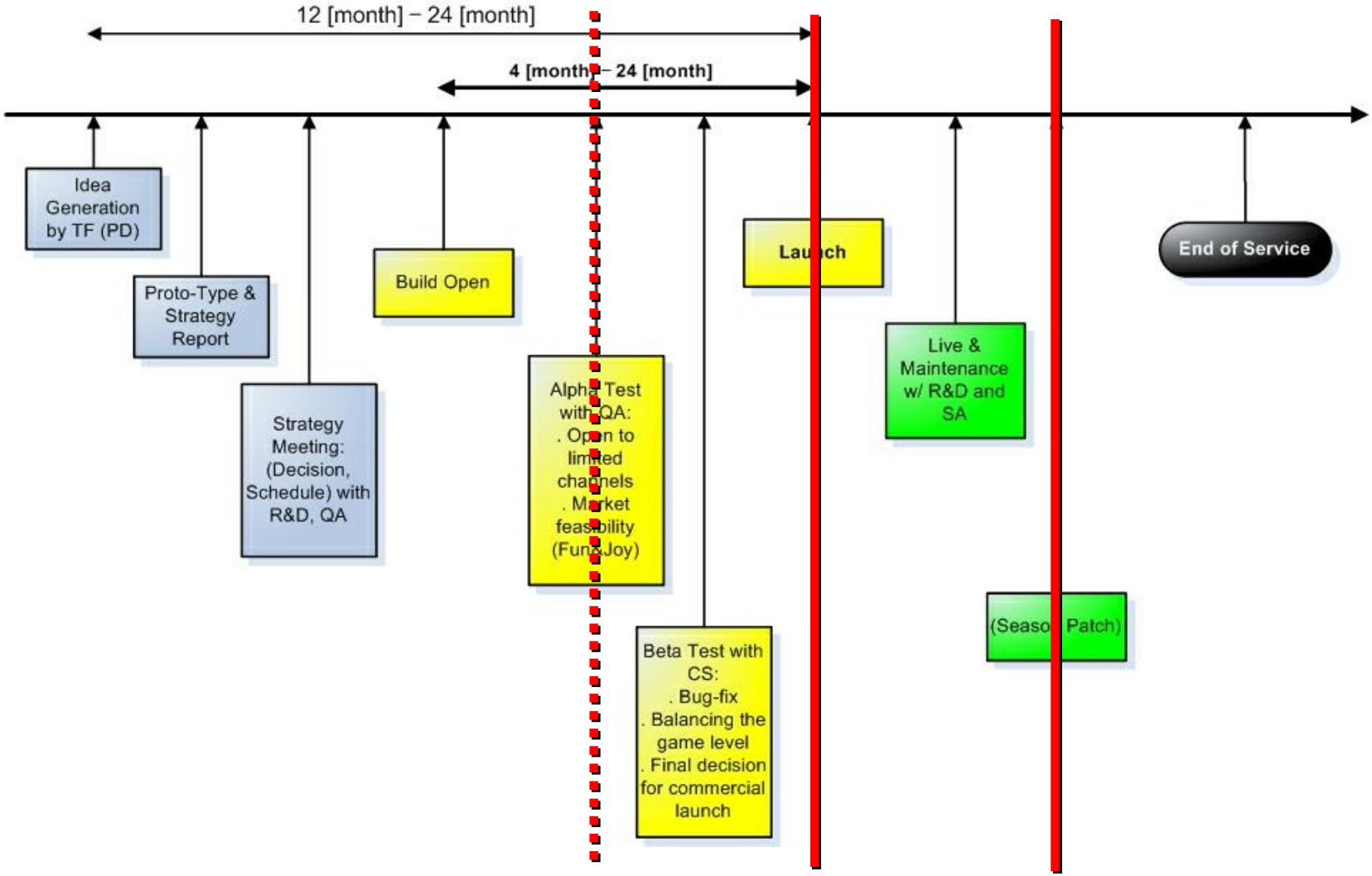


SDP Practice (1/2)

- Mobile Game Development com2uS
  - Mobile game industry is highly competitive and Com2uS is one of leading companies in the mobile game industries.
  - TinyFarm had developed by Com2uS and launched in year 2011.

SDP Practice (2/2)

- Com2uS Mobile Game Development (TinyFarm)

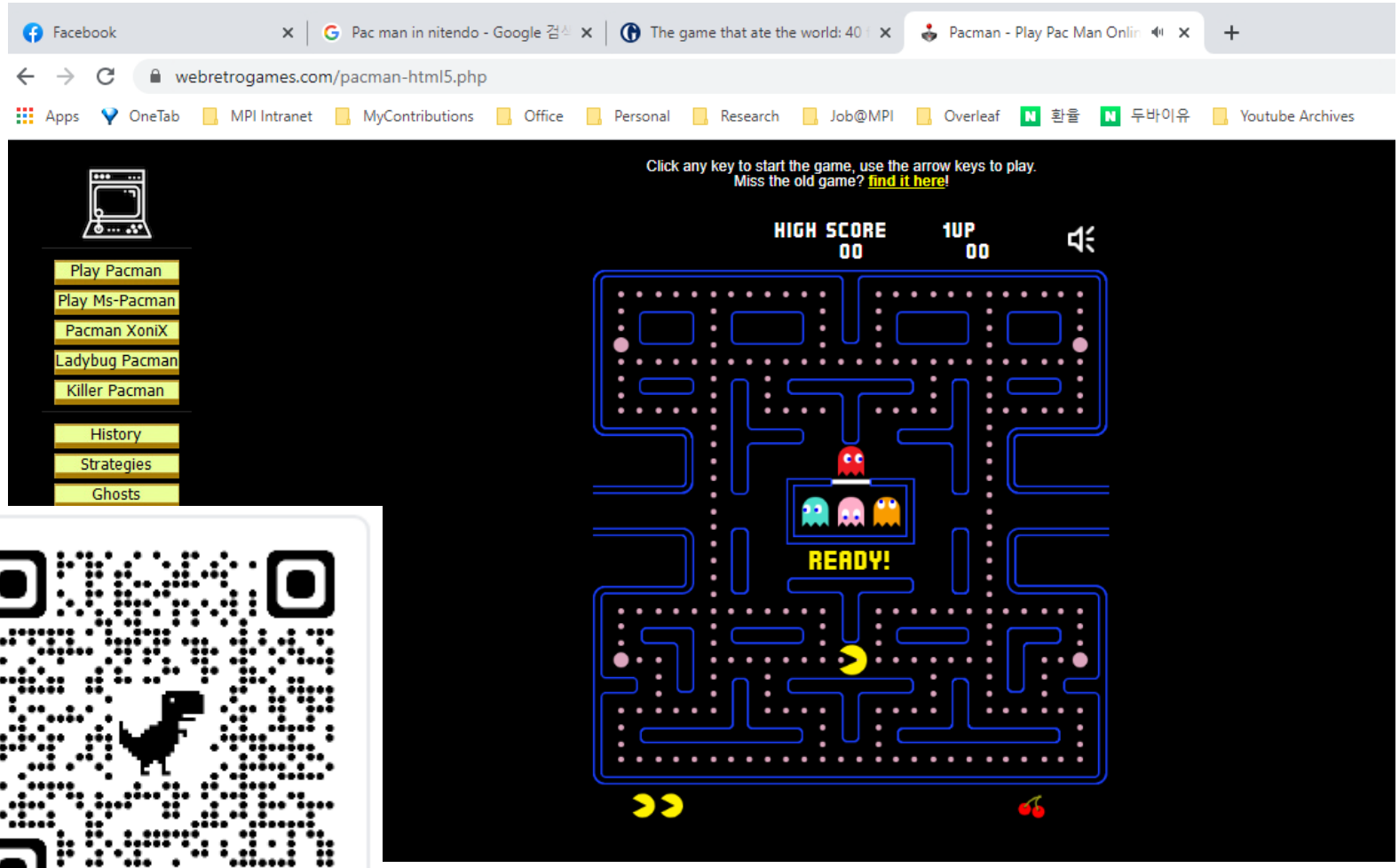


Classic Game Development

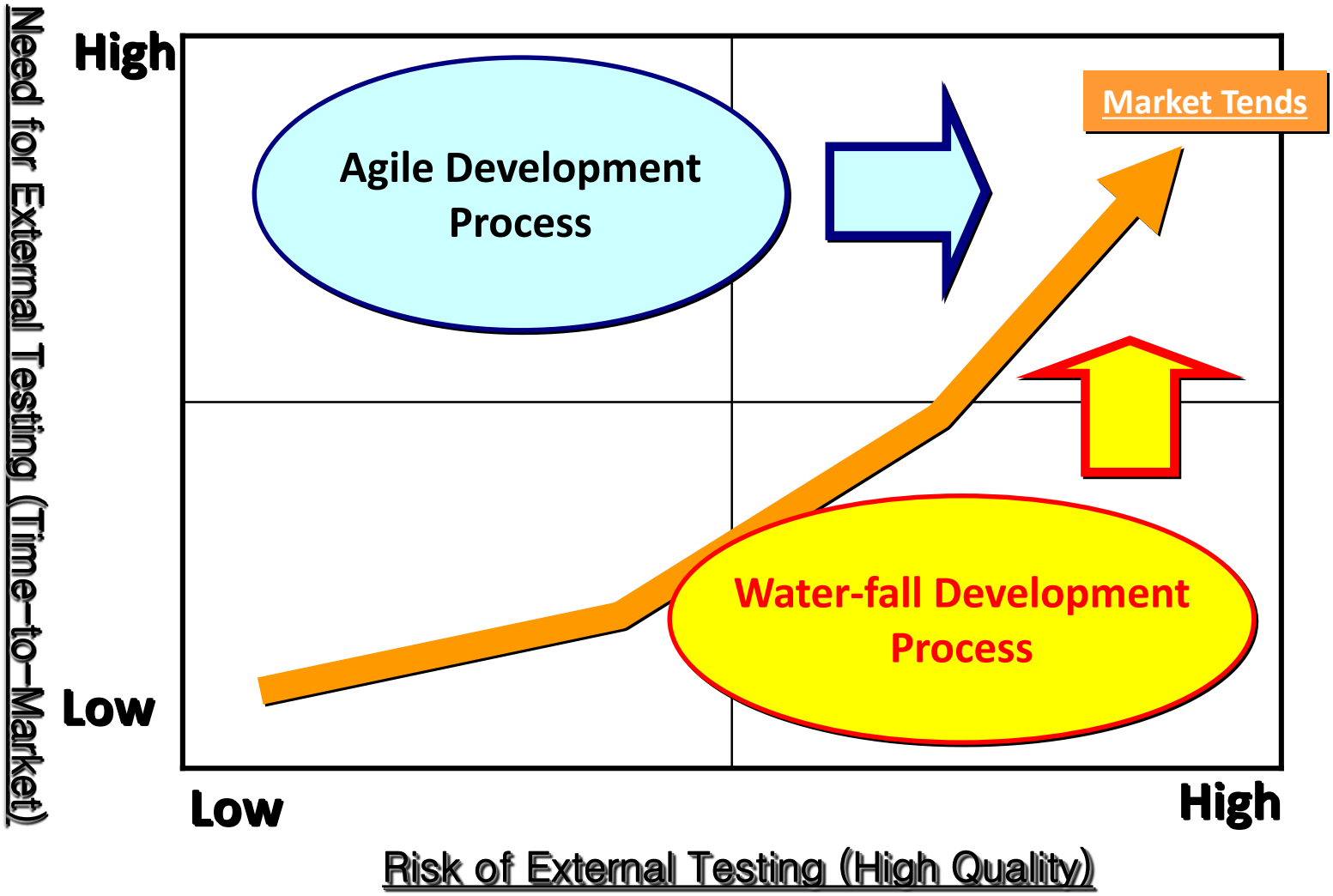
- Once upon a time, there is the game…

All it depends…

And Now…


Facebook
Pac man in nitendo - Google
The game that ate the world: 40
Pacman - Play Pac Man Onli
webretrogames.com/pacman-html5.php
Apps
OneTab
MPI Intranet
MyContributions
Office
Personal
Research
Job@MPI
Overleaf
환율
두바이유
Youtube Archives
Click any key to start the game, use the arrow keys to play.
Miss the old game? find it here!
Play Pacman
Play Ms-Pacman
Pacman XoniX
Ladybug Pacman
Killer Pacman
History
Strategies
Ghosts
HIGH SCORE
00
1UP
00
READY!

Mapping of SW Development Process




澳門理工學院
INSTITUTO POLITÉCNICO DE MACAU
MACAO POLYTECHNIC INSTITUTE