Project Development Process

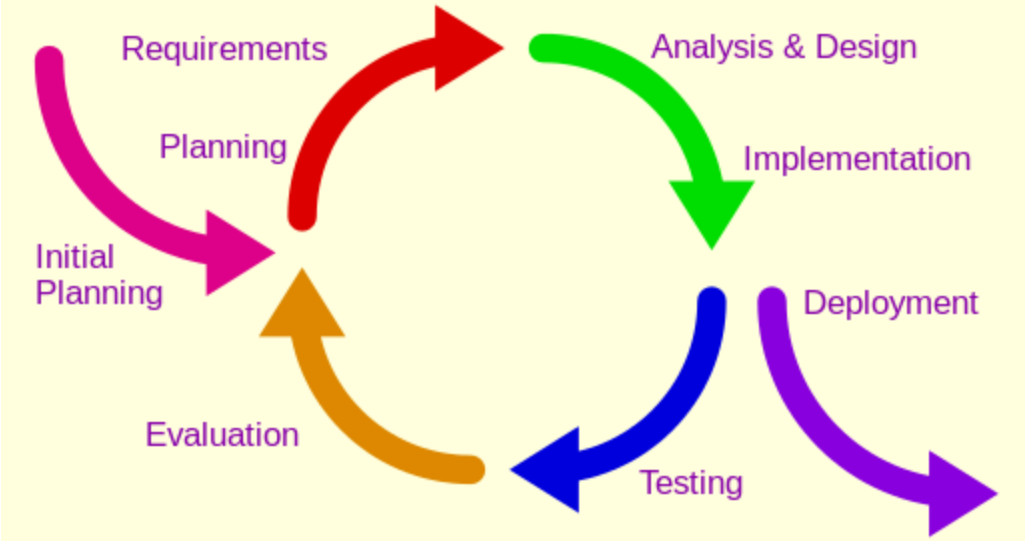
Nature has Great Organizing Power

Iterative Development

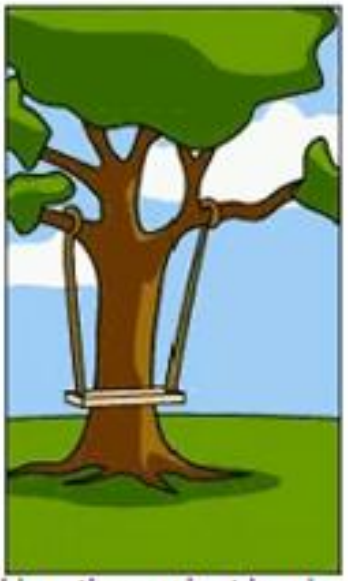
- **Iterative** and Incremental **development** is any combination of both an **iterative** design or an **iterative** method and an incremental build model for software **development**. The combination is of long standing and has been widely suggested for large **development** efforts.

- Iterative and incremental development are essential parts of the Modified waterfall models, Rational Unified Process, Extreme Programming and generally the various agile software development frameworks.

Iterative Process

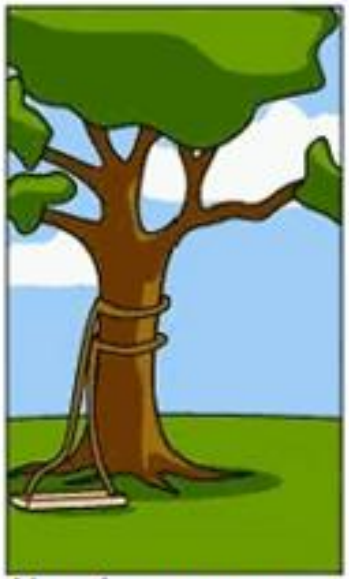


How the customer explained it



How the project leader understood it

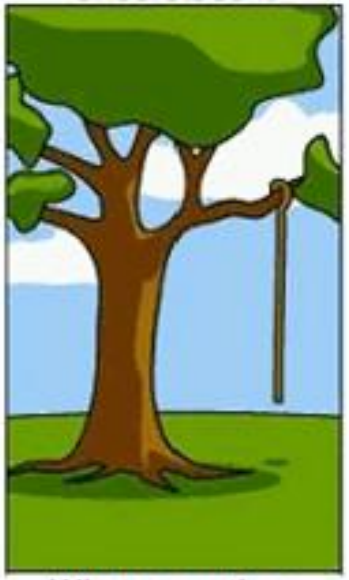
How the engineer designed it



How the programmer wrote it

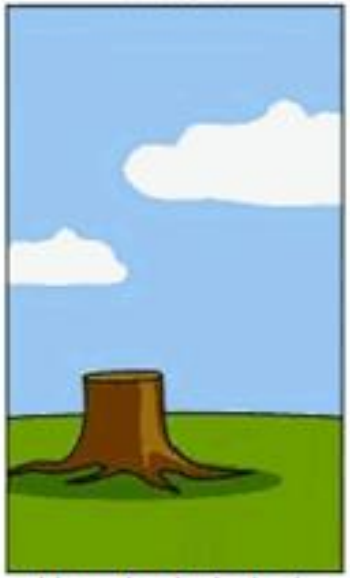
How the sales executive described it

How the project was documented



What operations installed

How the customer was billed

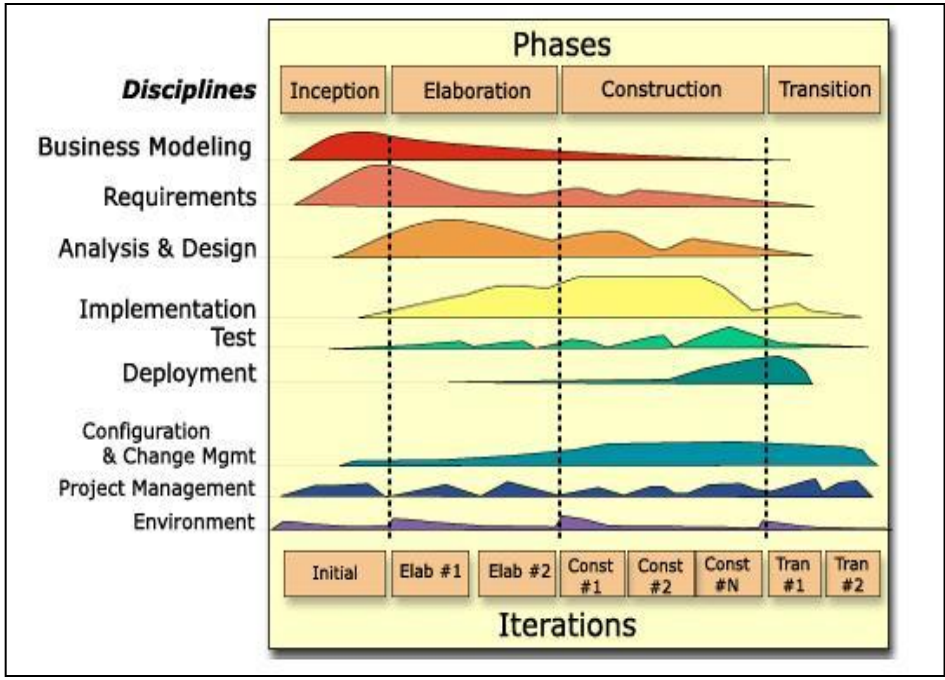


How the helpdesk supported it

What the customer really needed

Rational Unified Process

- Incorporates all elements of business process
- Iterative process identifies risk early in the lifecycle
- React to each risk in an efficient manner
- Keeps project on schedule
- Drives project in a predictable and repeatable manner
- Architecture-centric approach

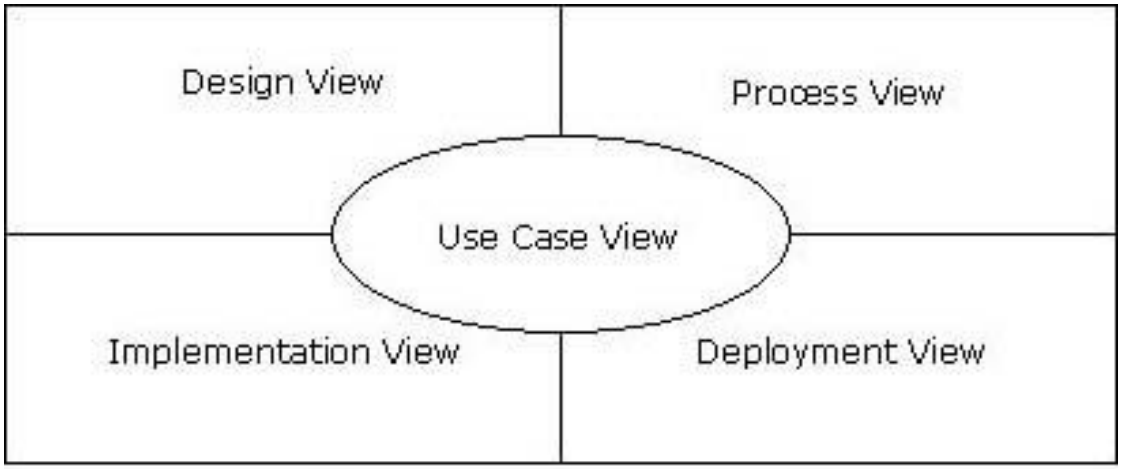


UML - RUP

Tre Amigos

"Fathers of UML"

- Booch, Rumbaugh, Jacobsen
- Mid-1990's – at Rational



Multiple Views of a Software System

Extreme Programming

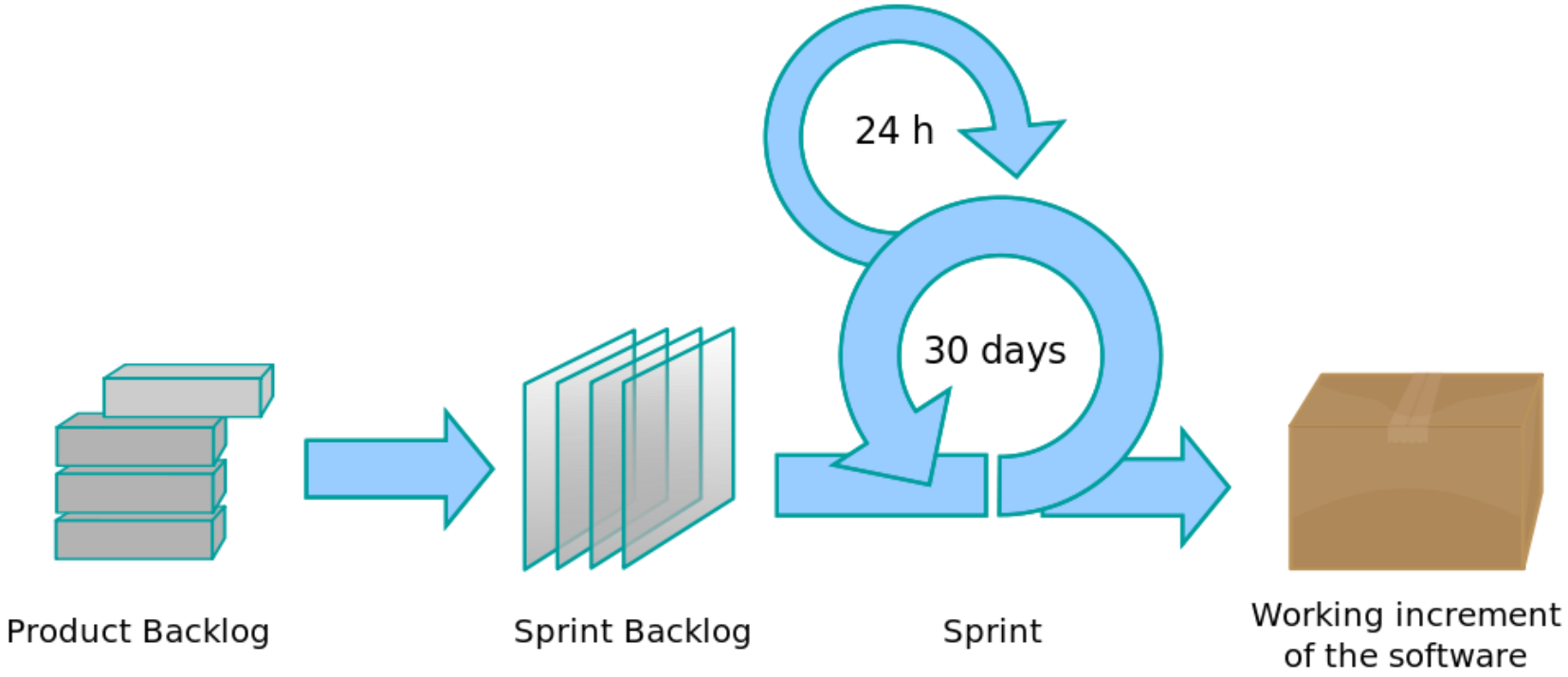
- Programming in pairs
- Extensive code review, unit testing of all code
- Flat management structure
- Simplicity and clarity in code
- Frequent communication with the customer and among programmers
- Beneficial elements of traditional software engineering practices are taken to "extreme" levels
- EXAMPLE: Code reviews taken to the extreme, is reviewed *continuously*, i.e. the practice of Pair programming

SCRUM Process

- Development team works as a unit to reach a common goal
- Team self-organizes by encouraging physical co-location
- Daily face-to-face communication among all team members and disciplines in the project.

- **MAIN DRIVER:**
  - Problems cannot be fully understood or defined
  - Focus instead on maximizing the team's ability to deliver quickly and respond to emerging requirements.

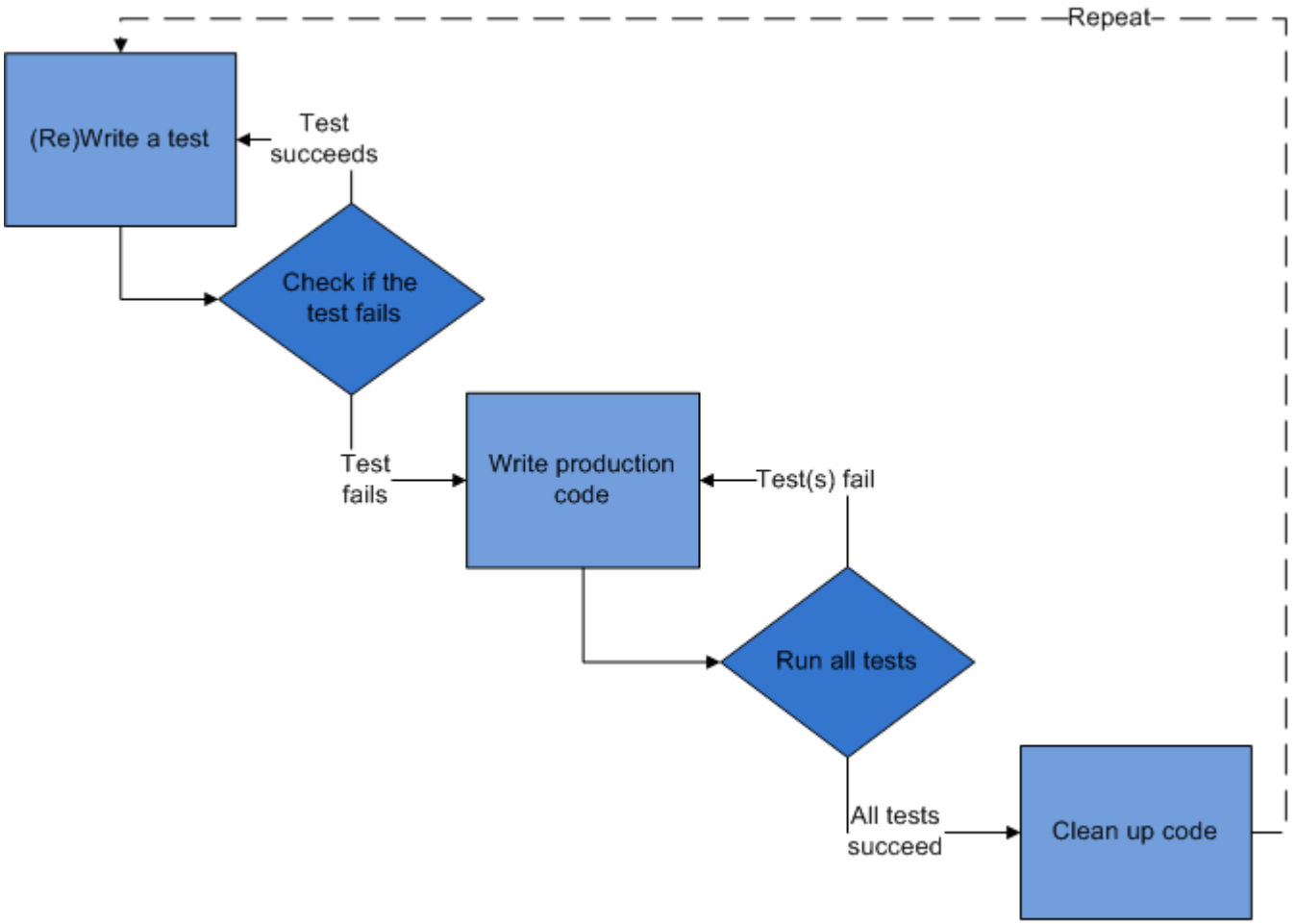
SCRUM Process



Test Driven Development

- Relies on the repetition of a very short development cycle
- Developer writes an (initially failing) automated test case
- Developer produces the minimum amount of code to pass that test
- Developer refactors the new code to acceptable standards

Test Driven Development



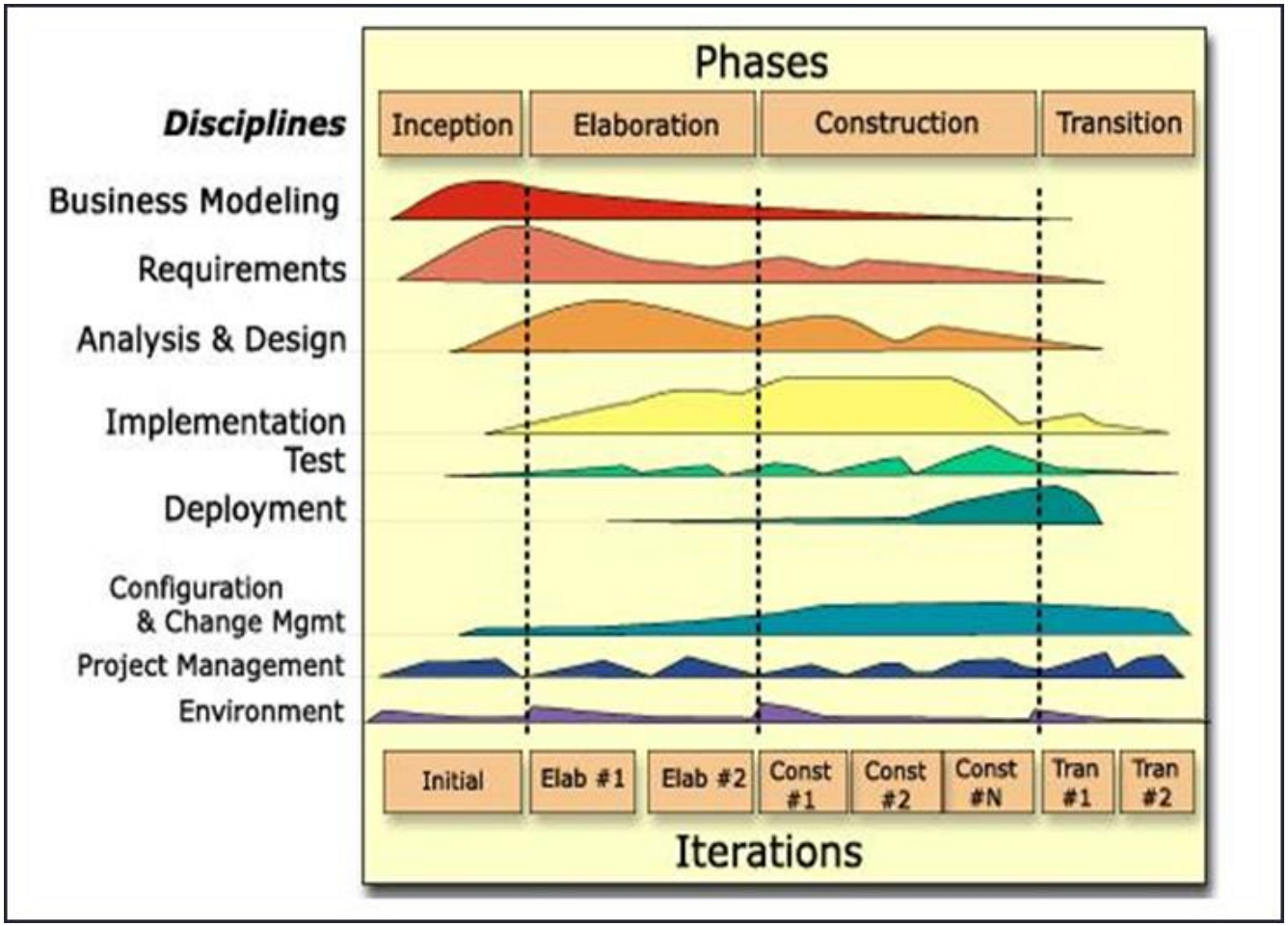
Continuous Integration

- Continuous Integration (CI) is the process of automating the build and testing of code every time a team member commits changes to version control.
- Merge of all developer working copies with a shared mainline several times a day.
- Advocate multiple integrations a day, perhaps as many as tens a day. The main aim of CI is to prevent integration problems
- Intended to be used in combination with automated unit tests written through the practices of test-driven development
- Build servers automatically run unit tests periodically or even after every commit and report the results to the developers

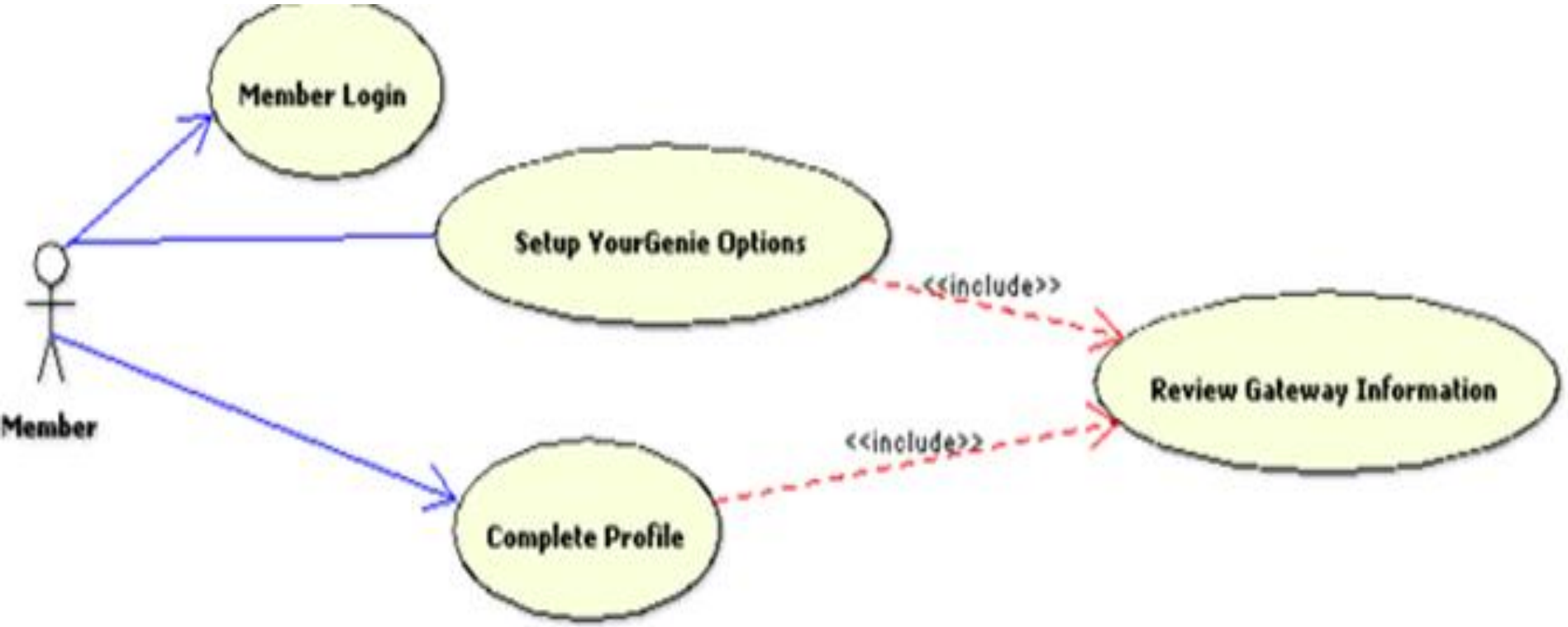
Main Point

- Good development process has core ingredients use-case driven, iterative, emphasis on testing. Development processes represent the structuring laws that guide successful development of large software systems.
- *Life unfolds according to the structuring Laws of Nature which are enlivened by Transcendental Consciousness.*

RUP Based Approach



Use Cases


Member Login
Setup YourGenie Options
<<include>>
Review Gateway Information
Member
<<include>>
Complete Profile

Use Case:

- Capture Requirements
- Define behavior
- Test & Validation

GENERAL CHARACTERISTICS

Intent	Prospect enrolls as member
Author	Joe Bruen; Paul Tarnoff
Last Update:	Created: 11/08/05
Primary Actor	Prospect
Secondary Actors	N/A
Description	A Prospect is making the step of committing to be a YourGenie member
Preconditions	Prospect has been notified that YourGenie is now in business
Trigger	Prospect enters their member ID
Success Post Condition	Prospect is now a member.
Failed Post Condition	Prospect has not been enrolled

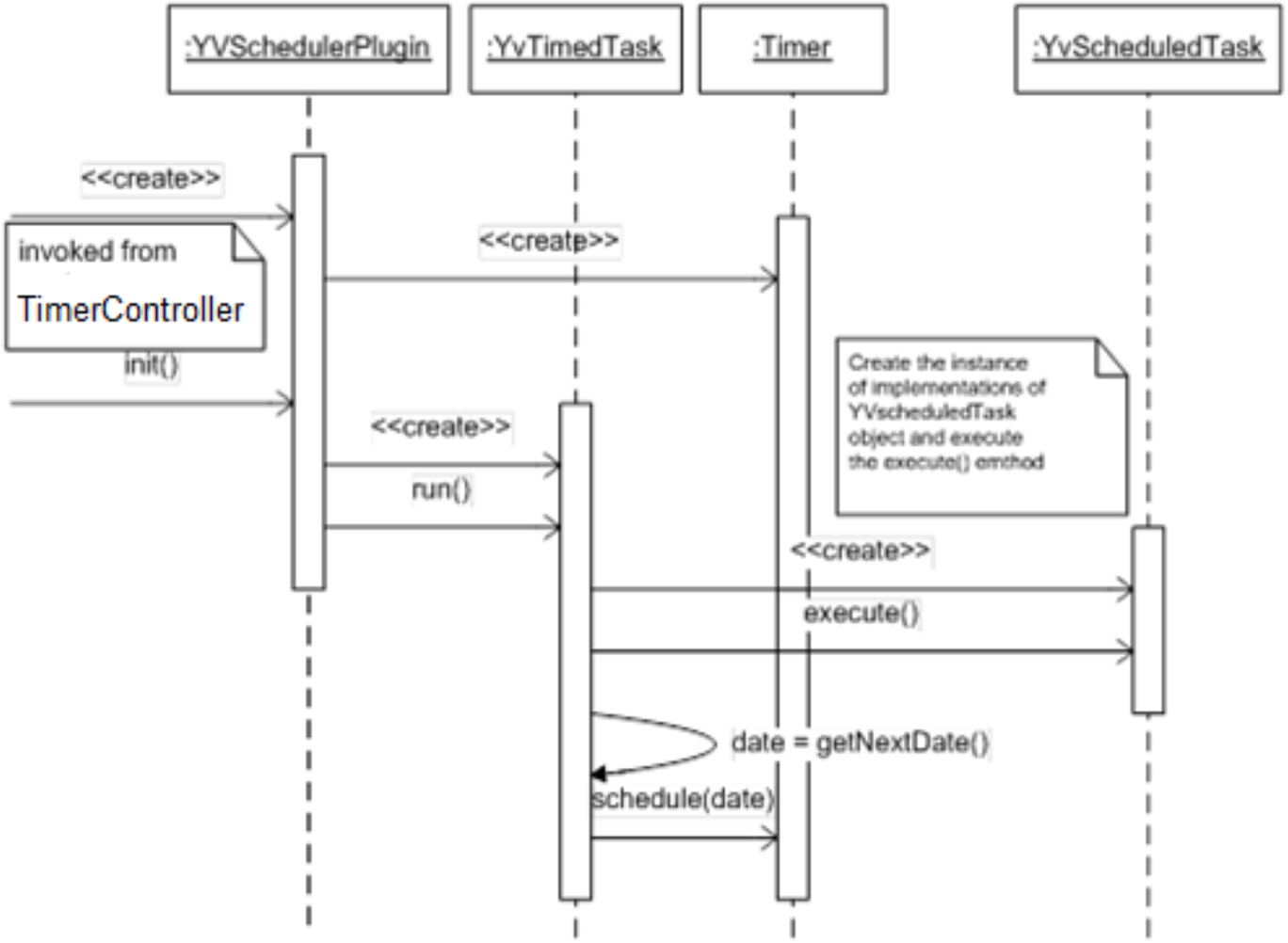
MAIN FLOW

Step	Action
1	This use case starts when Prospect accesses the Enrollment Site
2	Prospect enters identification information from notice: Member ID; email address.
3	System presents Prospect information gathered on Sell Site
4	Prospect enters Credit Card information: CC Number Billing Address Expiration Date
5	YourGenie stores & validates Credit information
6	YourGenie Acknowledges [new] Member
7	Member leaves Site
8	YourGenie sends Gateway information to [new] member via email
9	Use case ends

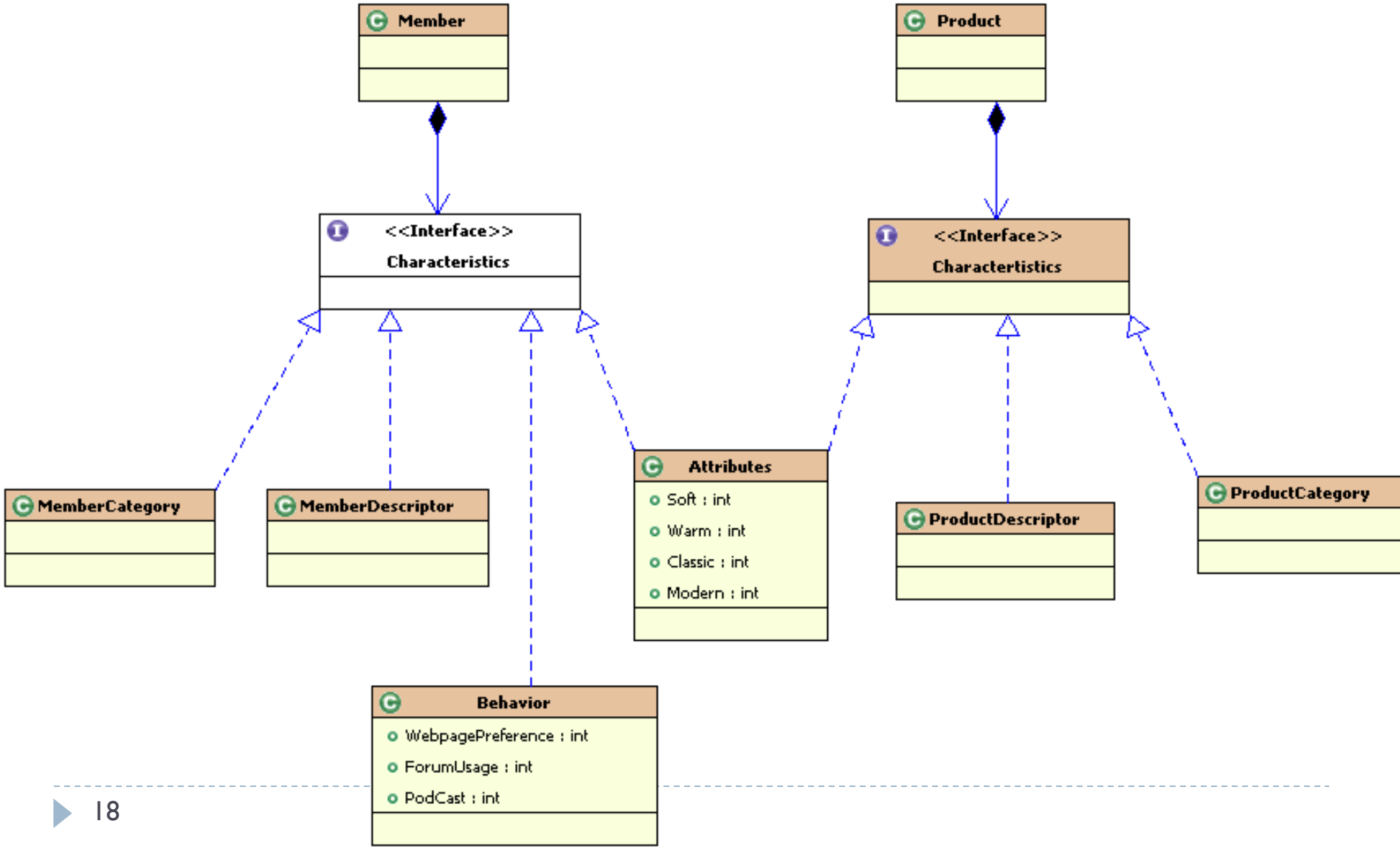
ALTERNATIVE FLOWS

Step	Branching Action
2.a	Prospect indicates no Member ID;
2.b	Prospect is re-directed to Sell Site
2.c	Use case ends
5.a	Credit card not validated
5.b	YourGenie Notifies Prospect
5.c	Use case continues at Main flow #4

Sequence Diagram



Domain Model



Main Point

- A good design reflects re-usability and adaptability and most importantly traceability of requirements. A good web design promotes stability in the business application and flexibility in the presentation layer. *The Field of Pure Creative Intelligence is characterized by the qualities of stability and flexibility.*