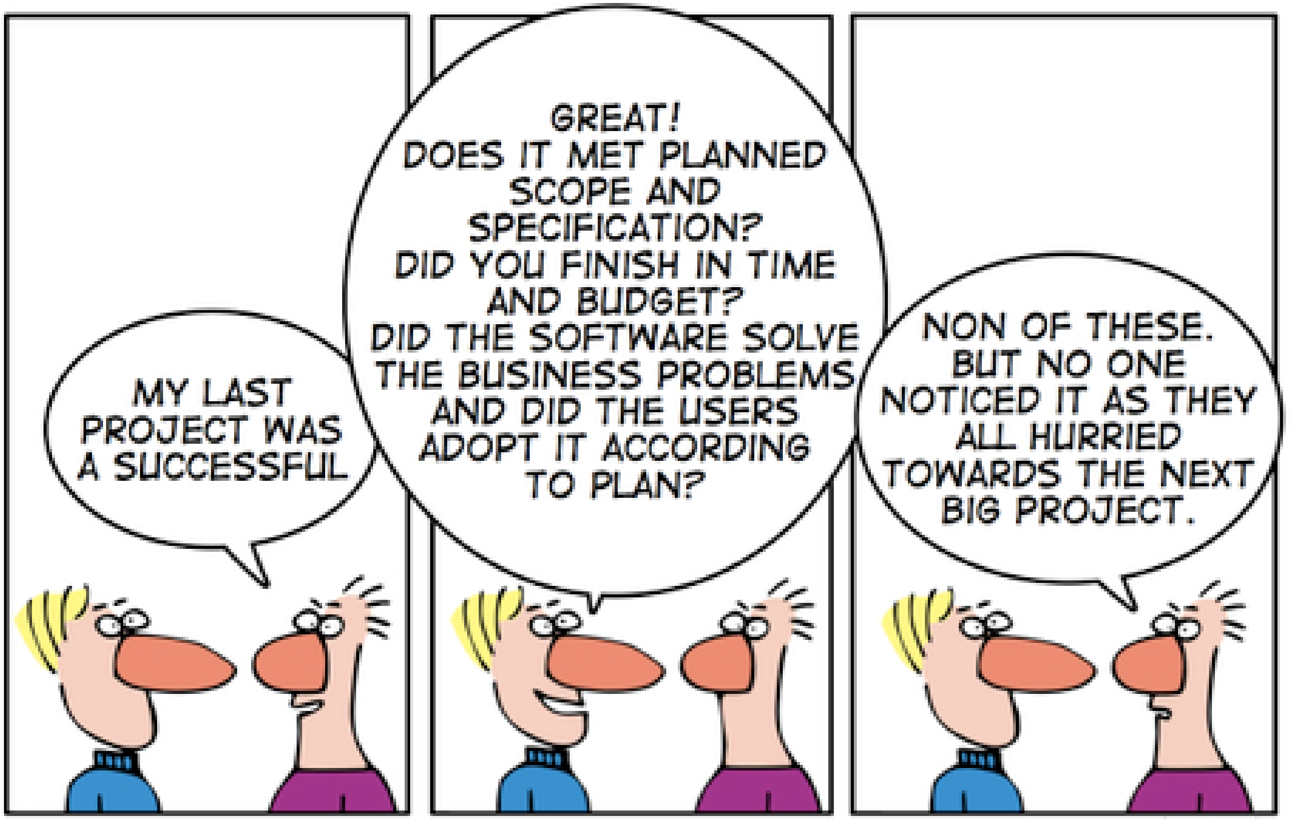

MY LAST PROJECT WAS A SUCCESSFUL
GREAT! DOES IT MET PLANNED SCOPE AND SPECIFICATION? DID YOU FINISH IN TIME AND BUDGET? DID THE SOFTWARE SOLVE THE BUSINESS PROBLEMS AND DID THE USERS ADOPT IT ACCORDING TO PLAN?
NON OF THESE. BUT NO ONE NOTICED IT AS THEY ALL HURRIED TOWARDS THE NEXT BIG PROJECT.
geek and poke

ONE YEAR IN A IT PROJECT - DAY 4:
SOMETIMES IT'S GOOD TO LOOK BACK TO PAST SUCCESSES

Project Management Methodologies

Production and Project Management

Project Management Methodology

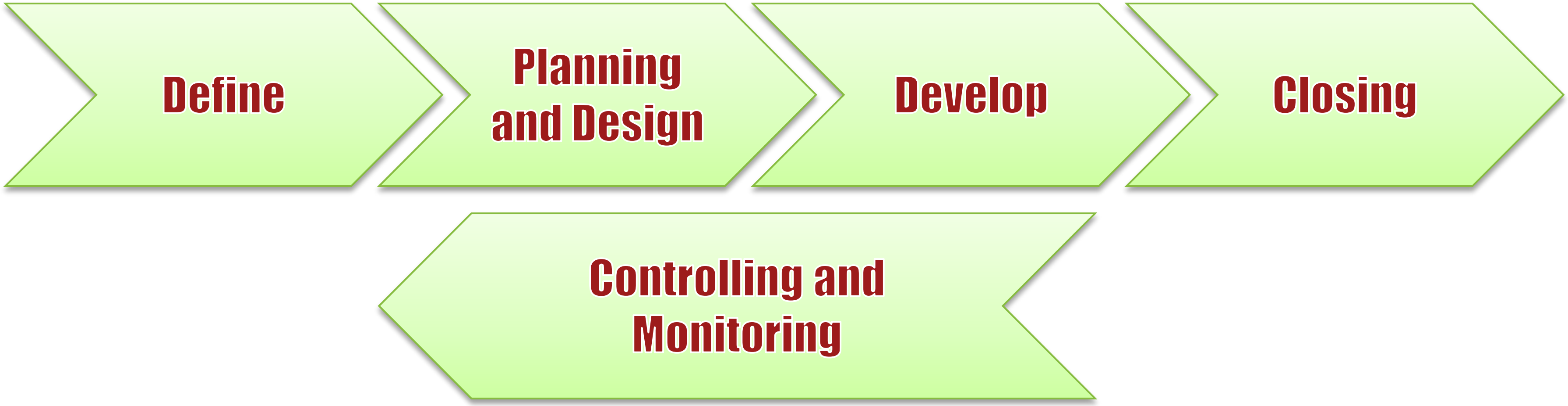
- A framework for project teams to *collaborate* in projects development.
- A framework to *structure*, *plan*, and *control* the development process

Project Management Methodology

- It encompasses a set of inter-related phases, activities and tasks that define the project process from the start through to completion.
- Each phase produces a major deliverable that contributes towards achieving project objectives.
- While the entire team is affected by the project management methodology, the project manager (or leader) is the owner and typically most impacted.

Phases in a Project

- Regardless of the methodology or terminology used, project management consist of 5 basic phases.



Define (Initiate)

- Scope
- Goals and Objectives
- Deliverables

- *Project Proposals/Pitch Document*

Identifying/Defining

Planning and Design

- Project Plans
  - Change Management
- Identify Tasks required to complete the project. Gantt Chart.
- Establish a budget for the project
- Scheduling logic, precedence diagramming and identify the critical path through the program evaluation review technique (PERT), critical path method (CPM)
- Risks Planning

- Formal project proposal or *detailed project plan*

Develop

- Organising projects and selecting teams
- Assign resources based on skills, budget and time, and to evaluate the results of such decisions
- Risk management
- Estimate *resource loading* and perform *resource leveling*

Controlling and Monitoring

- Communication and co-ordination
  - Meetings
  - Dailies
- Project Evaluation
  - Progress
  - Deliverables
  - QA

Closing & Review

- Delivery and Installation
- Stakeholder acceptance and sign-off of the project
- Bugs Tracking
- Post-mortem
  - Success and Failure
  - Establish best practices
- Final project report and archiving

- *Party*

How high can you count within 60 secs?

- You can work in a team
- Start the clock
- Count from 1 (write the number down)
- Skip any number which is divisible by 3 or has a 3 in it
- Number cannot be repeated
- Stop when mistake is made
- Stop when time reach 60 secs

Workshop

Let's Count

Project Management Methodology

Common Methodologies

Common Methodologies

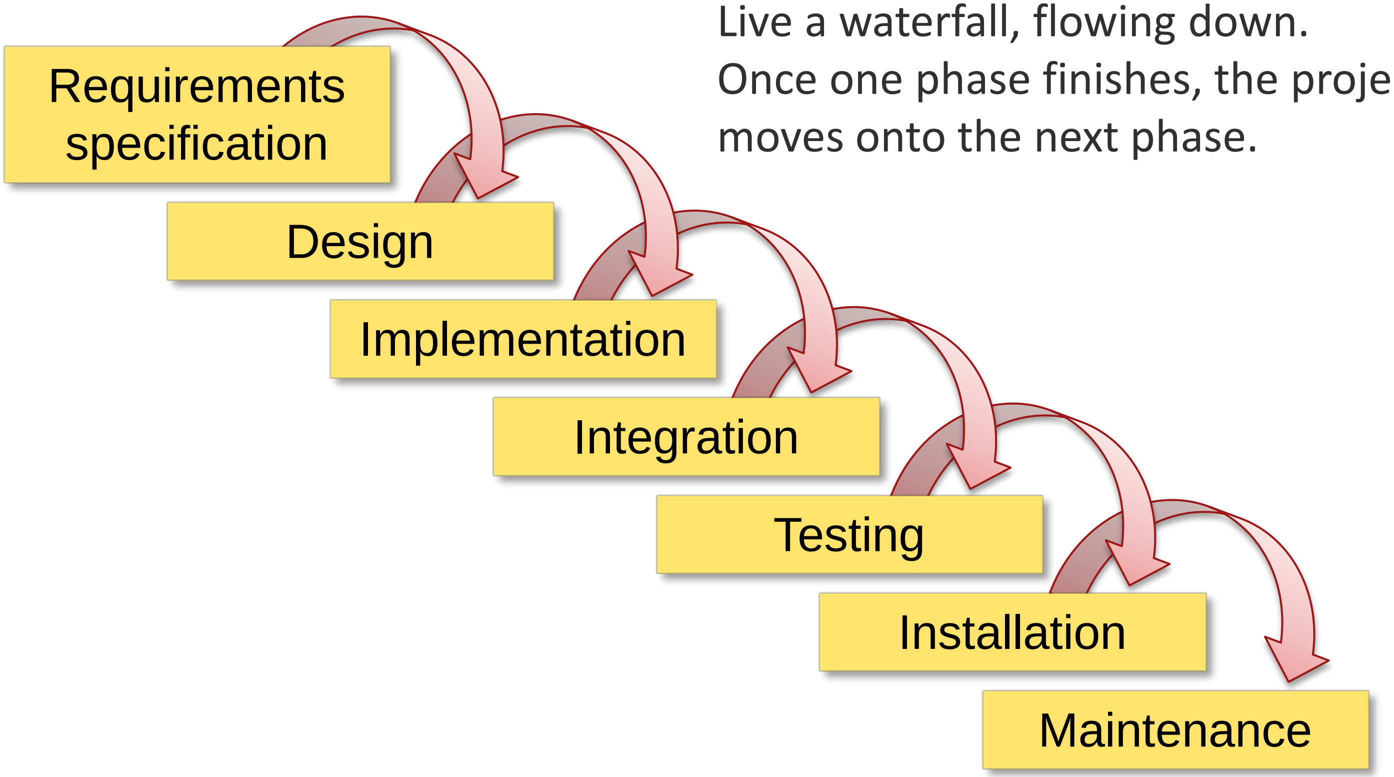
- Waterfall: linear framework type.
- Incremental: combination of linear and iterative framework type
- Prototyping: iterative framework type
- Spiral Approach: combination of linear and iterative framework type
- Rapid Application Development (RAD): Iterative Framework Type
- Agile: Iterative Framework Type

Waterfall vs Agile

Waterfall Model

Waterfall Model

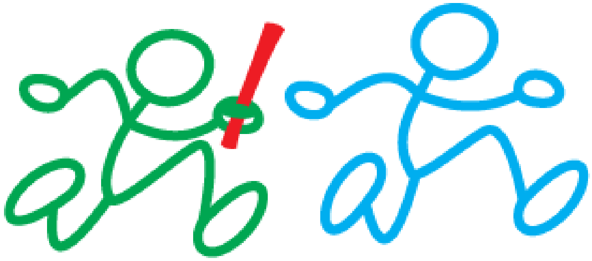
- Linear framework type.



Live a waterfall, flowing down.
Once one phase finishes, the project then moves onto the next phase.

Waterfall Explained

- A traditional sequential approach
  - Project only move to a new phase when the preceding phase has been completed and perfected
  - Project requirements are usually defined at the beginning
  - Little or no alterations to the plan unless absolutely necessary
- Require proper documentation in each and every step.
  - most systematic methodologies

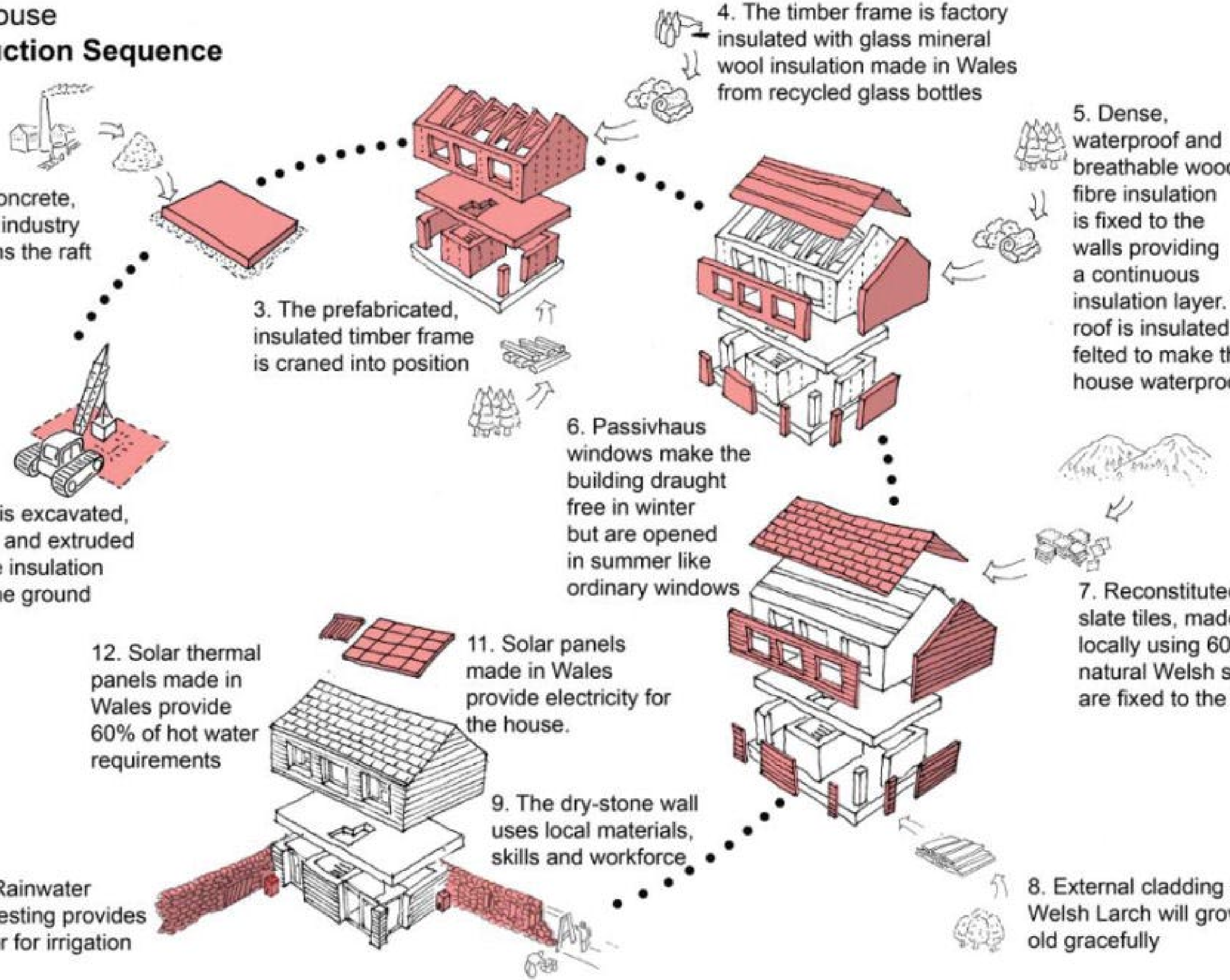


Example: Running a relay

Waterfall Model Origin

- The model originates in manufacturing and construction
  - project are well-defined and after-the-fact changes are extremely costly and often impossible.
- Suited for projects where a fixed budget and timeline and well-established requirements.
  - Tangible output is based on agreed scope
  - Target delivery dates are fixed for easy tracking

Larch House
Construction Sequence



1. The site is excavated, compacted and extruded polystyrene insulation placed in the ground

2. GGBS concrete, made from industry waste, forms the raft foundation

3. The prefabricated, insulated timber frame is craned into position

4. The timber frame is factory insulated with glass mineral wool insulation made in Wales from recycled glass bottles

5. Dense, waterproof and breathable wood fibre insulation is fixed to the walls providing a continuous insulation layer. The roof is insulated and felted to make the house waterproof

6. Passivhaus windows make the building draught free in winter but are opened in summer like ordinary windows

7. Reconstituted slate tiles, made locally using 60% natural Welsh slate are fixed to the roof

8. External cladding of Welsh Larch will grow old gracefully

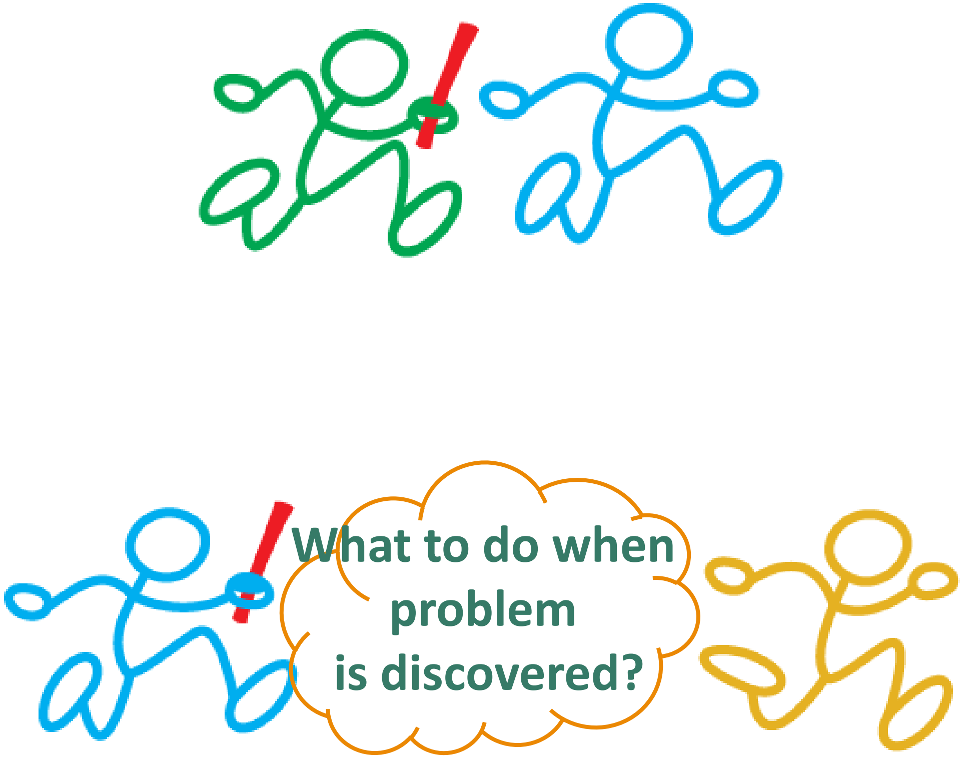
9. The dry-stone wall uses local materials, skills and workforce

10. Rainwater harvesting provides water for irrigation

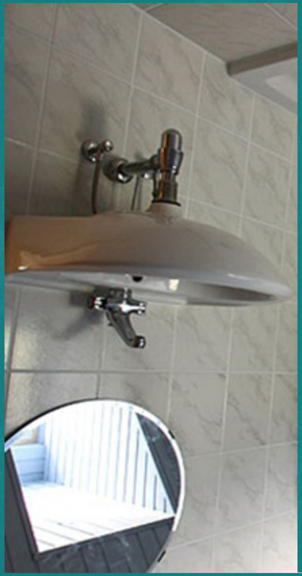
11. Solar panels made in Wales provide electricity for the house.

12. Solar thermal panels made in Wales provide 60% of hot water requirements

Wait, what if things go wrong?



What to do when problem is discovered?



Issues with Waterfall Model

- There is little room for change since any change in scope can seriously impact time/cost/quality.
- Any mistakes (issues) in early phase can severely impact later phase or entire project.

Real Projects

- Real projects are rarely straightforward and sequential
- It is generally not possible to completely define (and freeze) all the requirements at the start of the project
  - Difficult to go back and change something that was not well-thought out in the concept stage.
- High amounts of risk and uncertainty if working software is produced until late in the life cycle

Waterfall Model for Game Projects?

- Game projects are complex and object-oriented.
- Game projects can be long and laborious.
- Requirements for game projects has a moderate to high risk of changing. *(this is expected!)*
  - Products need to be better, faster
  - technological innovation
  - rapidly-changing needs from customers

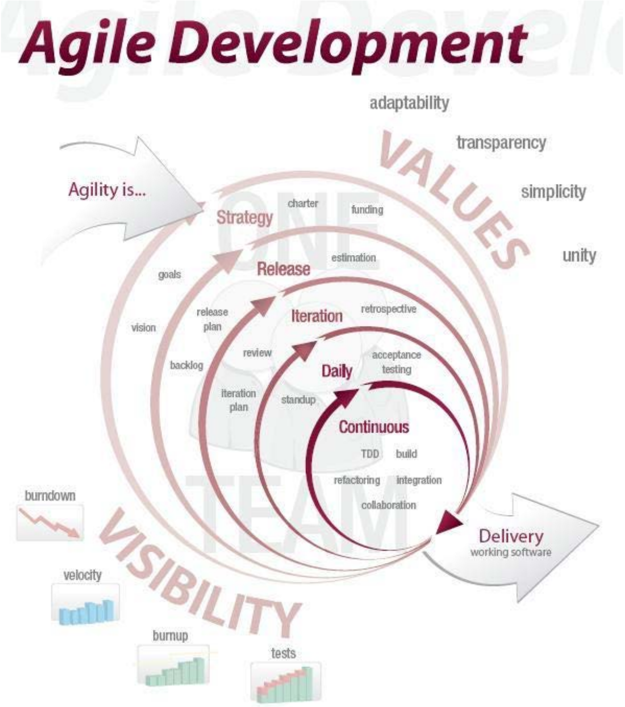
Waterfall Game Development Done Right by Eric Preisz

Waterfall vs Agile

Agile Method

What is Agile?

- A collection of methodologies designed to solve the problems associated with the long development cycles of traditional waterfall development methods.



Agile Methodologies

- Agile methods are iterative incremental processes, designed to be more flexible, and are driven by cooperation *between programmers and customers*.

The Agile Process

- Using *short iterations* of one to four weeks to build the project in *increments*.
- Keeps development aligned with changing business needs and a higher rate of success.
- Increased customer satisfaction as well as more rapid release of functional software.

Agile Methods Characteristics

- Lightweight, not Heavyweight
  - few rules and practices, easy to follow
- Adaptive, not Predictive
  - adapting quickly to changing realities
  - When the needs of a project change, the team changes
  - Don’t focus on planning the future in detail
- Descriptive, not Prescriptive
  - Processes need to evolve as needed, not be prescribed up front.

The Agile Manifesto

- The four core values

Individuals and Interactions over Processes and Tools.

Working Software over Comprehensive Documentation.

Customer Collaboration over Contract Negotiation.

Responding to Change over Following a Plan.

http://msdn.microsoft.com/en-us/library/dd997578.aspx

The 12 principles

- Satisfying 'customers' through early and continuous delivery of valuable work.
- Breaking big work down into smaller components that can be completed quickly.
- Recognizing that the best work emerges from self-organizing teams.
- Providing motivated individuals with the environment and support they need and trust them to get the job done.

The 12 principles

- Creating processes that promote sustainable efforts.
- Maintaining a constant pace for completed work.
- Welcoming changing requirements, even late in a project.
- Assembling the project team and business owners on a daily basis throughout the project.
- At regular intervals, having the team reflect upon how to become more effective, then tuning and adjusting behaviour accordingly.

The 12 principles

- Measuring progress by the amount of completed work.
- Continually seeking excellence.
- Harnessing change for competitive advantage.

Issues with Agile Methods

- Doesn’t have the structure, difficult to plan
  - hard to predict, unrealistic estimate of timelines, budgets.
- Active user involvement and intense collaboration are required
  - Time consuming, regular meeting with clients (Client management)
  - Person centric, having a member (or stakeholder) drop out of the project could prove catastrophic.
- High chance of project creep!
  - Lack of detailed requirements can increase

Biggest Challenge in Agile

- Team members must be
  - highly skilled / cross skilled in competencies as core teams are small.
  - knowledgeable and usage on the Agile framework
- Communication
  - Stake holders
  - Among team members

Comparison: Waterfall or Agile

Waterfall	Agile
• Predictive. Plan before start. Sequence fixed order • Hard to change each stage without getting the entire program rewritten	• Reactive. Evaluate and change at the end of each stage without getting the entire program rewritten
• No functional product as it is tested only at the very end • Bugs found, entire program having to be re-written	• Product at the end of each tested stage. • Debugging in the development cycle
• Only one main release in the waterfall method == any problems or delays mean highly dissatisfied customers.	• Delivery end of each phase/cycle • object-oriented designs • Has a working model for timely release even when it does not always entirely match customer specifications.
• Departmentalisation is done at each stage.	• Each coding module can be delegated to separate groups • Allows concurrent work to be done

Which is Better?

- Is outcome clearly defined?
  - a clearly defined outcome is better suited to the Waterfall method.
- Technology/Team Members' Skills
- Internal or external customer
  - The Waterfall method works well a signed contract
  - Internal customers tends to make changes
- Customers' knowledge/commitments
  - Do they have time to review and comment on regular iterations?

Well Known Agile Methodologies

- Extreme Programming
- *Scrum*
- Lean Software Development
- Feature Driven Development
- Agile Unified Process
- Crystal
- Dynamic Systems Development Method

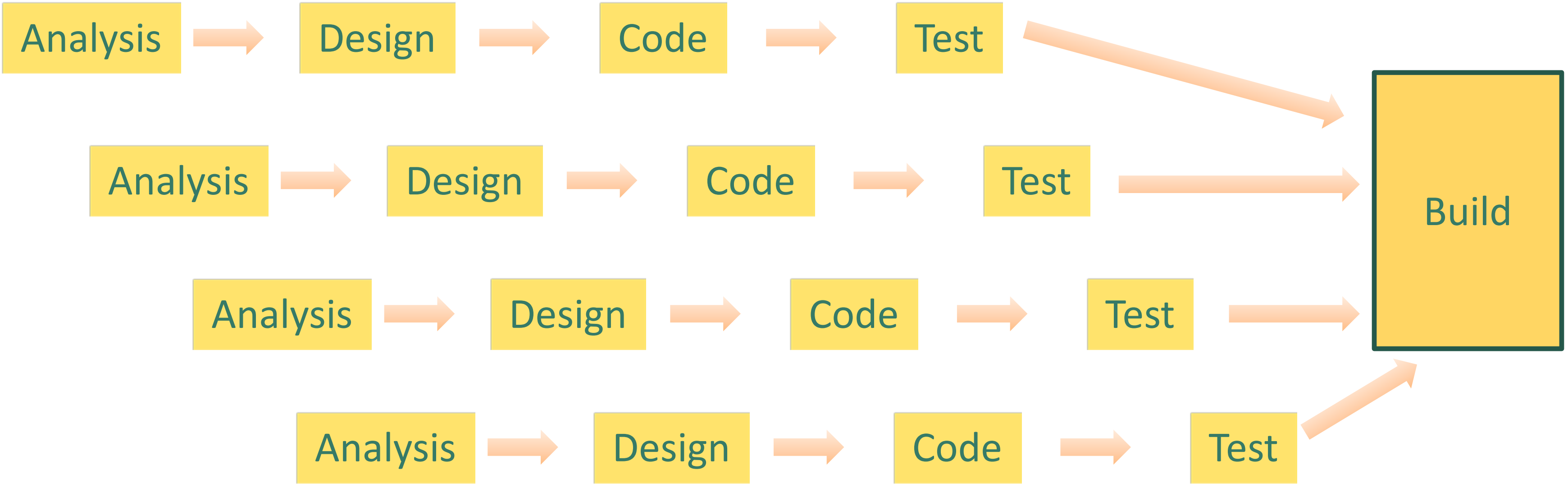
- A Practical Guide to Seven Agile Methodologies, Part 1&2
  - http://www.devx.com/architect/Article/32761/1954
  - http://www.devx.com/architect/Article/32836/1954

Not Tested

Other Methodologies

Incremental Approach

- The product is designed, implemented, integrated and tested as a series of incremental builds (waterfall).



Issues with Incremental Approach

- Advantages
  - Review previous development cycles before starting new ones
  - Allows some requirements modification/addition of new requirements.
  - More responsive to user needs than the waterfall model.
  - Risk is spread out over multiple cycles.
  - Testing may be easier on smaller portions of the system.
- Disadvantages
  - Need to identify the majority of requirements in the beginning.
  - Formal reviews more difficult to implement on incremental releases than on a complete system
  - Need more closer supervision across cycles
  - Cost and schedule may overruns
  - Users are required to learn how to use a new system with each deployment.

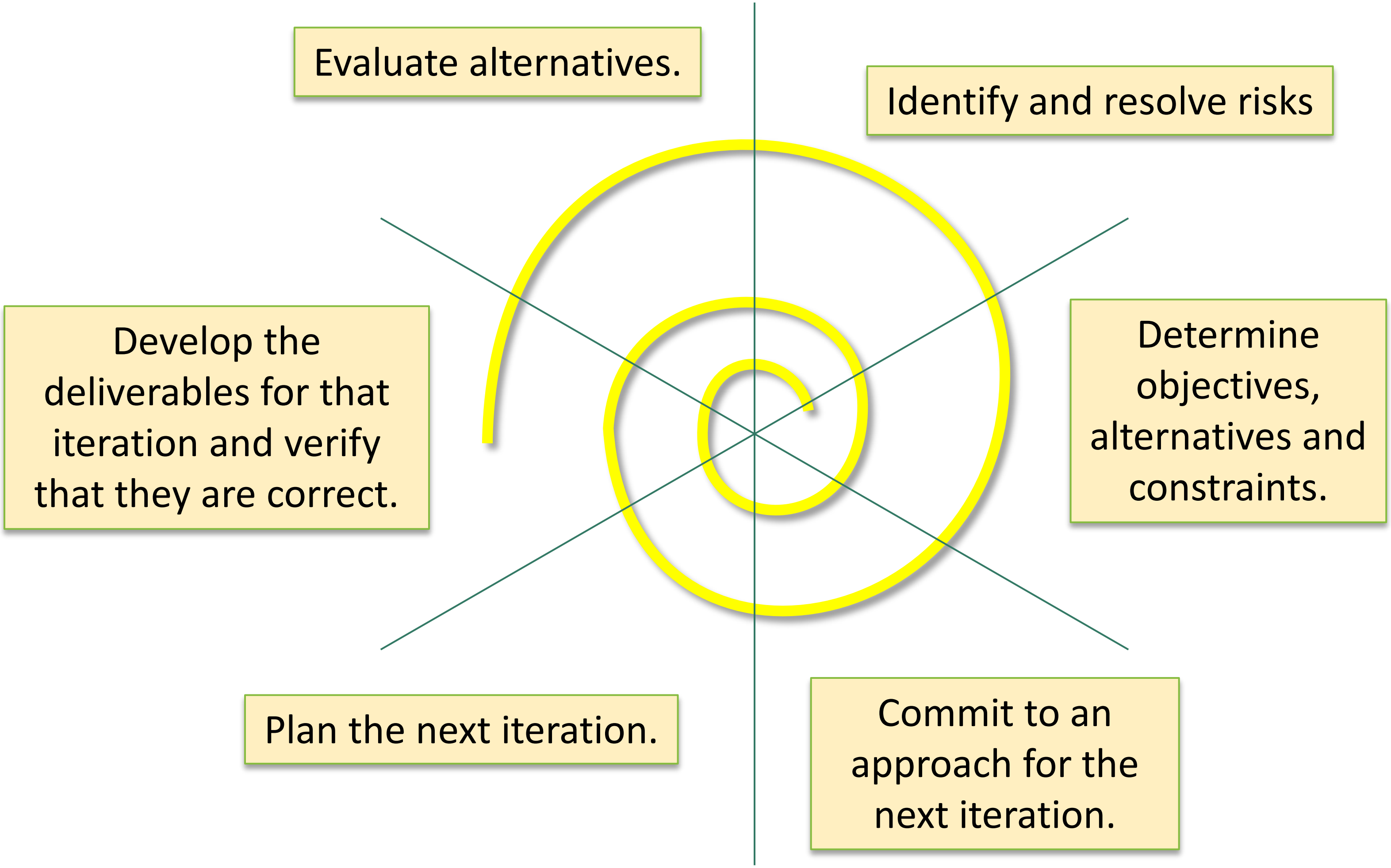
Prototyping Approach

- Iterative framework type
- A prototyping methodology is a software development process which allows developers to create portions of the solution to demonstrate functionality and make changes if needed

Issues With Prototyping

- Advantages of Prototyping
  - Early presentation of the system, users can identify problems in the system to the developers.
  - Clarify requirements, identify missing elements
  - Testing the usability of the system
- Disadvantages of Prototyping
  - Requires a considerable amount of user involvement, which may not be available to the developers
  - Developers may sway away from functional aspects of the system and focus more on the graphical user interface due to pressure form the users
  - Difficult to differentiate between prototype and final product

Spiral Approach



Evaluate alternatives.

Identify and resolve risks

Determine objectives, alternatives and constraints.

Commit to an approach for the next iteration.

Plan the next iteration.

Develop the deliverables for that iteration and verify that they are correct.

Issues with Spiral Approach

- Advantages
  - Project can begin without fully defining or understanding requirements. Requirements can be refined along the way.
  - Risks are spread over multiple software builds and controlled better.
  - Operational capability is achieved earlier in the program.
  - Newer technology can be incorporated into the system as it becomes available during later prototypes.
- Disadvantages
  - increase in both cost and time as project is closely monitored.
  - Users sometimes mistake a prototype for the final system.
  - Prototypes change between cycles, adding a learning curve for developers and users.
  - Risks may be increased

Rapid Application Development (RAD)

- Users and analysts meet to identify objectives of the application or system
- Prototyped and refined based on user responses
- The re-use of software components
- Systems are built and refined, the new systems or partial systems are tested and introduced to the organization
- A rigidly paced schedule that defers design improvements to the next product version
- Less formality in reviews and other team communication

Issues with RAD

- Advantages
  - Short development time and quick results
  - Users can approve the design and sign off on the visual model
  - Users helped to design the business aspects of the system
  - Very flexible for scope changes
- Disadvantages
  - Need experienced members (developers and users)
  - May try and hurry the project too much
  - Loosely documented
  - Customer may change their mind