

Agile Project Management

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Introduction

- Objective:
 - Introduce a general Agile Project Management framework.
- Target Audience:
 - Product, program and project managers.
 - R&D executives.
 - Product development teams.
- Disclaimer:
 - APM is not the best suited approach for all projects.
 - Remember “No Silver Bullets” – Frederick P. Brooks.

Sources

- Primary source:
 - Agile Project Management – Creating Innovative Products:
 - Jim Highsmith
 - ISBN-10: 0321219775
 - <http://www.adaptivesd.com/>
 - Cost about \$40 at Amazon.
- Secondary sources:
 - Project Management Body Of Knowledge, 3rd Ed. (PMBOK):
 - Project Management Institute
 - ISBN-10: 193069945X
 - <http://www.pmi.org>
 - Cost about \$30 at Amazon.
 - Personal experience.

Product Development Environment

- Lots of new products on the market.
 - Software, consumer electronics, vehicles, clothing, furniture, pharmaceuticals, consumer food products, etc.
- New products appear frequently.
- Organisations need to constantly innovate to stay competitive.
 - New or improved product offerings.
- Markets may change quickly.
 - Organisations must keep pace with change.
- Cost of product development is decreasing.
- People's attitude towards work is changing.
- A landscape of opportunity, uncertainty and risk.

Product Development Environment

- Linear thinking, prescriptive processes and enforced practices struggle in the new environment.
- The classic Plan-Do PM methodology cannot keep pace and needs to be adapted.
- Evolutionary lesson – If the environment change, your strategy must change as well.
- A mindset change is required.

Exploratory Process

- An exploratory process is more suitable.
- Focus change from anticipation (define, design, build) to adaptation (envision, explore, adapt).
- Keys to reliable innovation:
 - Continuous innovation.
 - Current requirements.
 - Product adaptability.
 - Future requirements.
 - Reduced delivery schedule.
 - Market window and better ROI.
 - People and process adaptability.
 - Product and business change.
 - Reliable results.
 - Growth and profitability.
- Agile Project Management is one such methodology.

Agile Principles

Agile Manifesto

*Individuals and interactions over processes and tools.
Working [products] over comprehensive documentation.
Customer collaboration over contract negotiation.
Responding to change over following a plan.*

While there is value in the items on the right, we value the items in the left more.

Adapted from <http://www.agilemanifesto.org/> by J. Highsmith.
“Software” replaced with “products”.

APM Principles

- Customer value through innovative products.
 - Deliver customer value.
 - Employ iterative, feature-based delivery.
 - Champion technical excellence.
- Leadership-Collaboration management.
 - Encourage exploration.
 - Build adaptive (self-organising, self-disciplined) teams.
 - Simplify.

Verbatim from APM – pg. 27.

APM Framework

- People are more important than processes, but processes are still important.
- Processes do not need to be static and prescriptive.
- Process improvement does not have to mean rigid standardisation and certification.
- Process must be coupled with business objectives.
 - Repeated manufacturing -> Prescriptive.
 - Reliable innovation -> Flexible.
- Follow agile values and principles and derived practices.

APM Framework Qualities

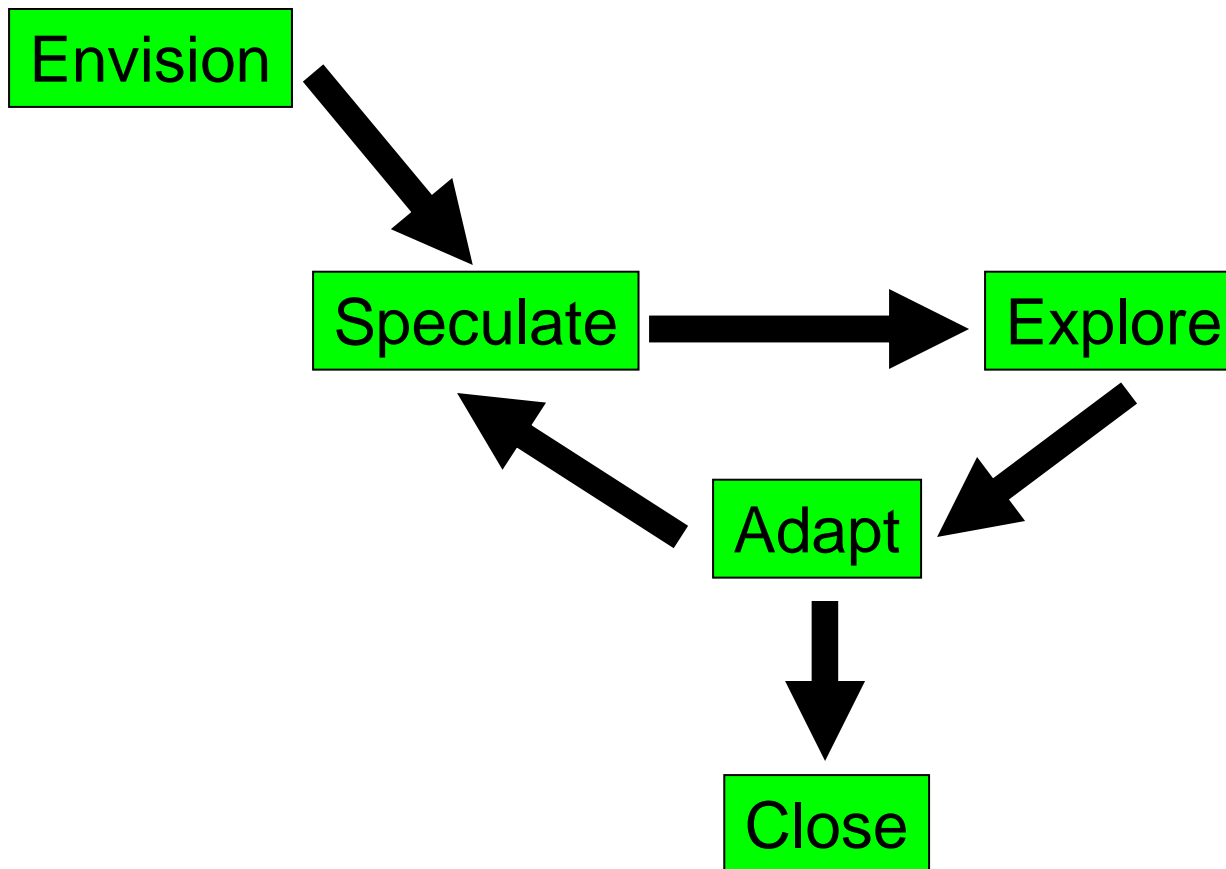
- Support an envision, explore adapt culture.
- Support self-organising, self-disciplined teams.
- Promote reliability and consistency to the extent possible given the level of project uncertainty.
- Be flexible and easy to adapt.
- Support visibility into the process.
- Incorporate learning.
- Incorporate practices and support each phase.
- Provide management checkpoints for review.

Verbatim from APM – pg. 80.

APM Framework - Phases

- Phase: Envision
 - Product vision and scope.
 - Project community and team collaboration.
- Phase: Speculate
 - Feature analysis.
 - Feature based iteration, milestone and release plans.
- Phase: Explore
 - Deliver features in short time-boxed iterations.
- Phase: Adapt
 - Review results, team performance and current needs.
 - Adaptive action.
- Phase: Close
 - Conclude project and share knowledge outside project team.
 - Celebrate.
- Compare with this with classic PM model:
 - Initiate, Plan, Manage, Control.

APM Framework – Phase Diagram



Envision Phase

- Objectives:
 - Defining product vision and objectives.
 - Vision bounds exploration.
 - Scope and constraints.
 - Participants.
 - Development approach.
- Market and feasibility studies as starting point.

Envision Phase - Practices

- Product vision:
 - Product vision box and elevator statement.
 - Product architecture and guiding principles.
- Project scope:
 - Project data sheet.
- Project community:
 - Get the right people.
 - Participant identification.
 - Customer team-developer team interface.
- Approach:
 - Process and practice tailoring.

Envision Phase – Practice 1

- Practice: Product vision box and elevator test statement.
 - Help product team to create a concise shared vision.
 - Whole product team should participate.
 - Vision box:
 - Product name.
 - Key selling points.
 - Detailed features.
 - Operating requirements.
 - Graphics.
 - Elevator test statement:
 - Sell product in less than two minutes.
 - For (target customer)
 - Who (statement of need or opportunity)
 - The (product name) is a (product category)
 - That (key benefit, compelling reason to buy)
 - Unlike (primary competitive alternative)
 - Our product (statement of primary differentiation)

Envision Phase – Practice 2

- Practice: Product architecture.
 - Internal plumbing of the project.
 - Platform, components, interfaces.
 - Use Feature Breakdown Structure (FBS) to provide a high-level architectural view.
 - Architecture and team structure should co-evolve.
 - Define a set of guiding principles.

Envision Phase – Practice 3

- Practice: Project data sheet.
 - Single page summary of scope, schedule and resources.
 - Client or customers.
 - Project manager.
 - Product manager.
 - Project objective statement.
 - Trade-off matrix.
 - Exploration factor.
 - Delay cost.
 - Key features.
 - Client benefit.
 - Performance and quality attributes.
 - Key architectural components.
 - Issues/risks.

Envision Phase – Practice 4

- Practice: Get the right people.
 - Appropriate technical capability.
 - Self-discipline.
 - Process is less important than people.

Envision Phase – Practice 5

- Practice: Participant identification.
 - Identify all participants and their roles.
 - Customers – Provide requirements.
 - Project team – Develop product.
 - Stakeholders – Contribute constraints.
 - Critical – Critical to success.
 - Essential – Can delay project.
 - Nonessential – Interested parties.
 - List of participants can include:
 - Executive sponsor, project manager, product manager, lead engineer, management, customer team, project team, suppliers, government.

Envision Phase – Practice 6

- Practice: Customer team-developer team interface.
 - Define the collaboration interface between the customer team and the developer team.
 - Information flow and channels.
 - Accountability and responsibility.
 - Distinguish between product and project manager.
 - Face-to-face interactions are more valuable than documentation.

Envision Phase – Practice 7

- Practice: Process and practice tailoring.
 - Tailor a process and practices framework that defines the team's approach.
 - Team must agree on an approach and follow it.
 - Start with organisation's standard approach.
 - What process and practices to use?
 - What additional practices to use?
 - Which ones should be modified?
 - What level of formality is required?
 - Process and practices might evolve during project.

Speculate Phase

- Objectives:
 - Determine product features and constraints.
 - Create release, milestone and iteration plans.
- Employ short time-boxed iterations.
- Feature based development.
 - Product managers control features.
 - Developers control design and implementation.
- Plans are speculative and will change.

Speculate Phase - Practices

- Feature breakdown structure:
 - Product feature list.
 - Feature cards.
 - Performance requirements cards.
- Release planning:
 - Release, milestone and iteration planning.

Speculate Phase – Practice 8

- Practice: Product feature list.
 - Create a feature list, starting with the vision.
 - A feature is a piece of product that delivers some useful and valuable functionality.
 - Evolutionary process.
 - Organise as a hierarchy.
 - Product, component, group, feature.
 - Product, business subject area, business activity, feature.
 - Prioritise features.

Speculate Phase – Practice 9

- Practice: Feature cards.
 - Record basic feature information, high-level requirements and work estimates.
 - Identify features, do not define.
 - Discuss features in detail with customer teams.
 - Items that can be on a feature card:
 - Feature identifier and name.
 - Feature description.
 - Feature type.
 - Estimated work effort.
 - Requirements uncertainty.
 - Feature dependencies.
 - Acceptance tests.
 - Use the back of cards to record technical activities.

Speculate Phase – Practice 10

- Practice: Performance requirements cards.
 - Record the key operation and performance requirements.
 - Items that can be on a performance card:
 - Performance identification and name.
 - Performance description.
 - Difficulty in achieving.
 - Acceptance tests.

Speculate Phase – Practice 11

- Practice: Release, milestone and iteration plan.
 - These plans present a roadmap of how the team will implement the product vision.
 - Base plans on Feature Breakdown Structures (FBS) instead of Work Breakdown Structures (WBS).
 - Three levels of plans: Releases, milestones and iterations.
 - Plans should focus on:
 - Delivering value to customers.
 - Reducing risks.

Speculate Phase – Practice 11

- Iteration 0:
 - Use in larger projects to allow more time for planning.
- Iteration 1-N:
 - Decided on iteration, milestone and release periods.
 - Iterations should have themes to focus the team.
 - Assign features to iterations.
 - Incorporate schedule and resource constraints.
 - Focus on highest value or risky features first.
- Larger projects can use component level planning.

Speculate Phase – Practice 11

- How much to plan?
 - Complete plan.
 - Two iteration plan: next and everything after.
 - Iteration-by-iteration.
- In all cases, the next iteration should always be planned in more detail by the team.
- Determine first feasible deployment date.
 - Plan and prepare for deployment.
 - Use continuous integration early in project life.

Speculate Phase – Practice 11

- Estimation.
 - Use standard techniques.
 - Estimate by feature, not activity.
 - How do you estimate the unknown?
 - Use progressive estimation.
- Scope evolution.
 - Scope change is inevitable in exploration projects.
 - Manage scope creep.
 - All parties must be aware of scope creep implications.
- Risk analysis and management should be part of plan.
 - Adapt plans to address risks.

Explore Phase

- Objectives:
 - Deliver high-value customer features.
 - Utilise low-cost change technical practices.
 - Develop an adaptive, collaborative project community.
- Project manager's duties:
 - Help team to articulate and understand goals and constraints.
 - Help team to interact effectively.
 - Facilitate decision making process.
 - Develop team members.
 - Ensure appropriate feedback is gathered and incorporated.
 - Track progress and deal with reality when things get off track.

Explore Phase - Practices

- Deliver on vision and objectives:
 - Workload management.
- Technical practices:
 - Low-cost change.
- Project community:
 - Coaching and team development.
 - Daily team integration meetings.
 - Participatory decision making.
 - Daily integration with the customer team.

Explore Phase – Practice 12

- Practice: Workload management.
 - Team manages day-to-day activities.
 - Team members should be self-disciplined and accountable.
 - Project manager should monitor progress and provide guidance.
 - Avoid micro-management!
 - This requires a person with sufficient technical knowledge.

Explore Phase – Practice 13

- Practice: Low-cost change.
 - Reduce the cost of iterative development.
 - Keep the cost of change and experimentation at a minimum.
 - Technical debt must be met. Minimise it.
 - Simple design.
 - Frequent integration.
 - Ruthless testing.
 - Opportunistic refactoring.

Explore Phase – Practice 14

- Practice: Coaching and team development.
 - Unleash the team's capabilities by helping each team member to continuously improve.
 - Get the right people.
 - Focus on delivering results.
 - Move from individuals to a team.
 - Trust, respect and privacy.
 - Interaction and equal contribution.
 - Attach issues not persons.
 - Develop individuals' capabilities.
 - Provide team with adequate resources.
 - Customers also needs coaching.
 - Manage team rhythm.

Explore Phase – Practice 15

- Practice: Daily team integration meetings.
 - Coordinate team member activity daily.
 - Raise issues, but do not discuss solutions.
 - PM should address.
 - Short meetings attended by all team members.
 - Three questions:
 - “What did you do yesterday?”
 - “What are you planning to do today?”
 - “What impediments do you face?”
 - Team should determine if the daily meetings are valuable.

Explore Phase – Practice 16

- Practice: Participatory decision making.
 - Provide a framework to frame, make and analyse decisions.
 - Effective decision making is a hallmark of effective teams.
 - Frame issues.
 - Impact of decisions?
 - Who should provide input or be involved in discussion?
 - Who will make the decision?
 - Decision criteria?
 - Decision communication: to whom and how?
 - Who will review the decision?

Explore Phase – Practice 16

- Making the decision.
 - Collaborate - win-win outcomes.
 - Allow discussion to diverge first to spread views, but steer towards convergence.
 - Set deadlines for decisions.
 - Once consensus has been reached and a decision was made, everyone should be committed to implementing it.
- Review decisions.
 - Learn not blame.
 - Share experience in team and organisation.
- Self-organisation vs. decisions by leaders.
- Multiple scenarios and delayed decision making.
 - Toyota's set-based concurrent engineering (SBCE).

Explore Phase – Practice 17

- Practice: Daily integration with the customer team.
 - Ensures the development team stays in touch with customer needs.
 - Typically interact with one person: Product Manager.
 - Discuss requirements, risks, tradeoffs, etc.
 - Do not wait for iteration reviews to speak to customers.
 - Might be a difficult practice to follow strictly.

Adapt Phase

- Feedback:
 - Progress.
 - Technical risks.
 - Requirements evolution.
 - Market related risks: Still competitive?
- Evaluate:
 - Functionality.
 - Quality.
 - Team performance.
 - Project status.

Adapt Phase

- Questions to ask:
 - “Are customers getting value for money?”
 - “Is the project progressing satisfactorily?”
 - “Is the project team adapting effectively to changes imposed by management, customers or technology?”
- Adaptive action, not corrective action.

Adapt Phase – Practice 18

- Practice: Product, Project, and Team Review and Adaptive Action.
 - The objectives are:
 - To reflect, learn and adapt.
 - Allow the team to change pace for a while.

Adapt Phase – Practice 18

- Customer focus groups.
 - Demonstrate completed functionality to customer team.
 - Sessions:
 - Facilitated.
 - Small customer group.
 - Review product, not documentation.
 - Focus on changes, not detailed requirements.
 - Wider customer audience, more view points.
 - Form of acceptance test, wider than system.
 - Record change requests.
 - Build customer-development team relationship.
 - Changes are reviewed by development team after session.
Feedback to customers only later.

Adapt Phase – Practice 18

- Technical review.
 - Happens continuously during iteration.
 - Scheduled reviews:
 - Facilitated.
 - Small group of competent developers.
 - Review product, selected documentation and statistics.
 - Look at technical issues, design and architecture.

Adapt Phase – Practice 18

- Team performance evaluation.
 - Questions:
 - “What went well?”
 - “What didn’t go so well?”
 - “How do we improve the next iteration?”
 - “What don’t we understand?”
 - Team self-assessment.
 - Performance.
 - Behaviour.
 - Evaluate processes and practices.

Adapt Phase – Practice 18

- Scope and value status.
 - Measure features completed per iteration.
 - What is the financial value of the features delivered?
- Schedule status.
 - Determine the expected time to project completion.
 - Determine shortest, probable and latest completion dates.
 - Constant variance over time means risks and uncertainty is not sufficiently managed.

Adapt Phase – Practice 18

- Cost and resource status.
 - Use organisation's accounting system if not too heavyweight.
 - Determine the expected cost to complete project.
- Quality status.
 - Use existing quality measures.
 - Proportion of code tested.
 - What is the team's assessment?

Adapt Phase – Practice 18

- Project team information.
 - Share key project information with the team.
 - Visual.
 - Prominent.
 - Concentrate on vision, scope and issues/risks.
- Adaptive action.
 - Minor tweaks.
 - Update iteration and delivery plans.
 - Technical, resource and schedule adjustments.
 - Management focus:
 - Delivering value.
 - Reduce risks.

Close – Practice 19

- Practice: Close
 - Celebration!
 - Show appreciation to the team.
 - Closure: Indicates project completion.
 - Cleanup open items.
 - Organisational knowledge transfer.
 - Project retrospective.

Final Comments

- APM is a good approach for exploration projects, such as new product development.
- APM can be applied to general product development, not just software.
- Be pragmatic, adapt processes and practices to project and organisation's needs.
- Try APM on smaller projects first.

Questions?

- Questions?

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