

# The Art of Project Management

making things happen in an  
innovative company

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# Making innovative companies be successful: The Art Of Project Management



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# Why is Project Management important to Innovative companies?

- Managers need to make (good) decisions
  - Based on evidence or just feeling?
  - Need evidence for how many people
  - Need evidence for how much money
- Many Innovative companies fall into the trap of just doing fun stuff in a random way
  - Many lose focus

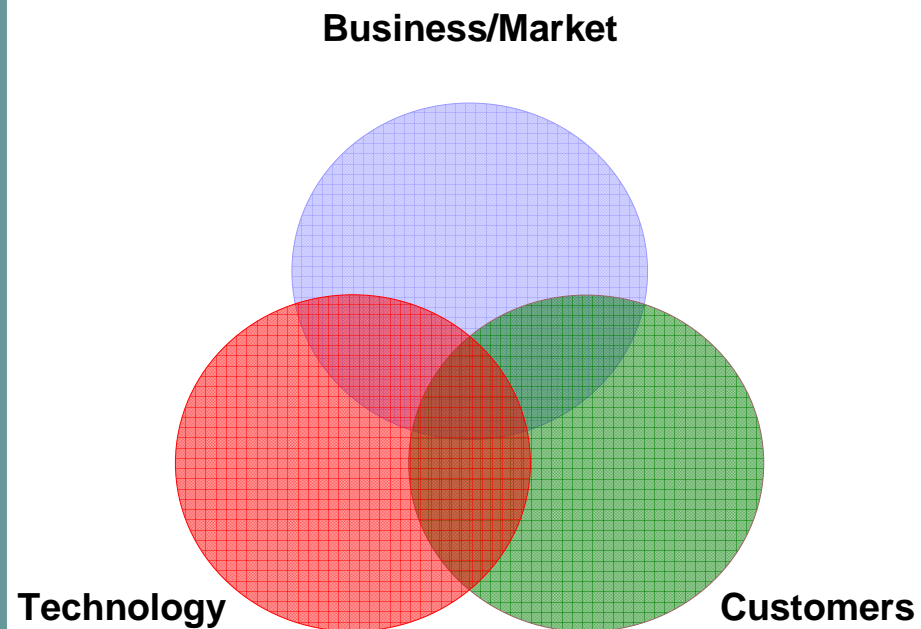
# Why is Project Management important to Innovative companies?

- One major difference between successful innovative companies and good ideas is “laser sharp focus”
- Do one thing and do it better than everyone else
  - Google did “just search for the first few years”
  - Example from DisplayLink
    - Technology to connect from Wired USB or wireless or Ethernet
    - We could have tried to do all – market was giving good signals about all
    - Management team needed evidence about how much effort would each or all technologies take
- Project Management helps give a framework to make great business decisions

# Project Manager – what skills?

- Project Manager  $\neq$  Your best engineer
  - PM is a technical skill that has to be taught and experienced as much as any other technical area like programming
- Please don't make the same mistake as many companies that “promote” their best technical lead to become the PM!
- Distinct professional skill-set and training
- Different way of thinking from a programmer

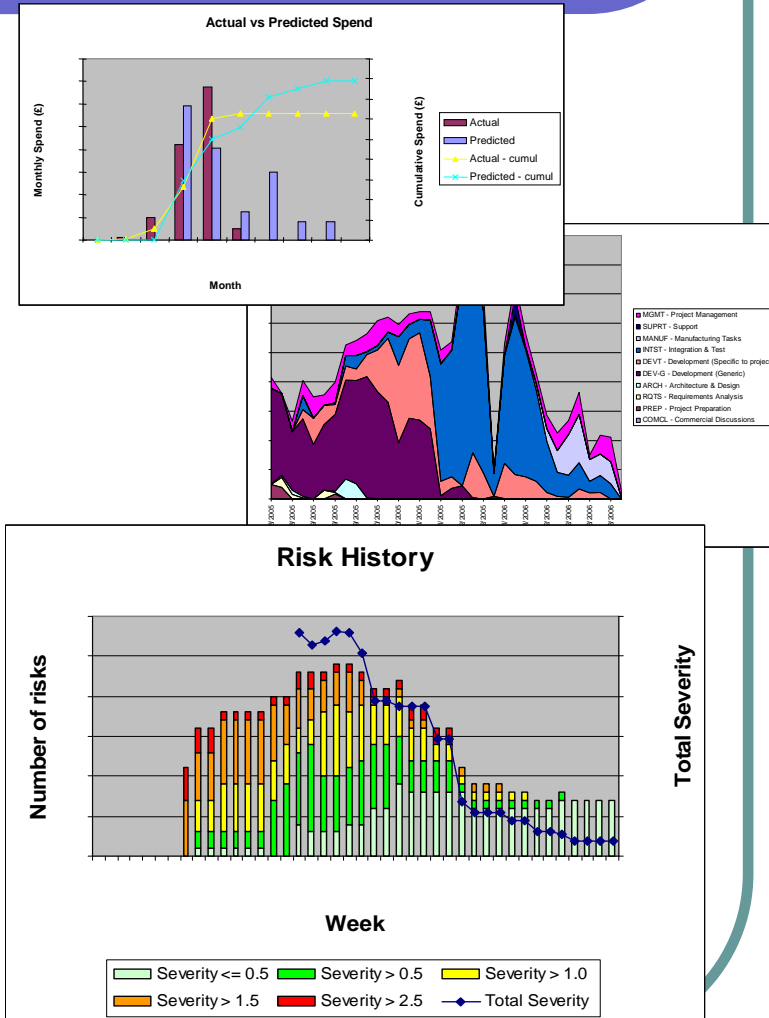
# 3 “competing” areas of a business



- Project Management is best when it supports all parts of the business
- All 3 areas have different views
- A successful business uses all 3 areas
- It is easy to spend time fighting over tiny differences and ignore the major overlap

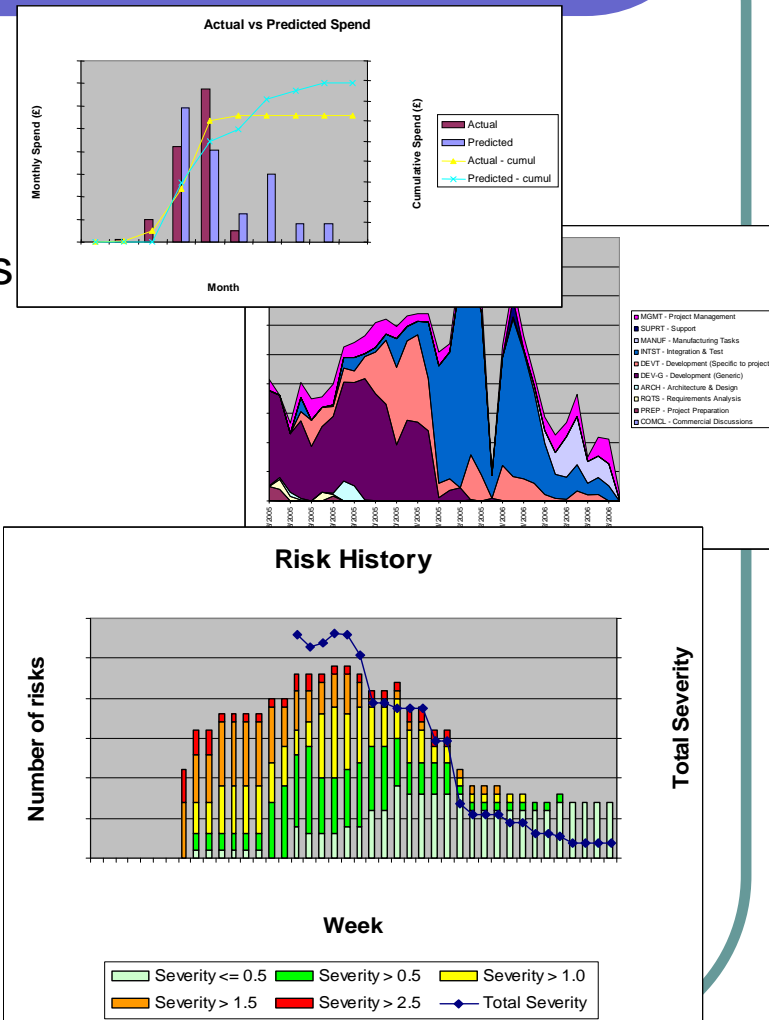
# Professional Project Management :

- Progress Reporting
  - Regular reports against time, budget, functionality
  - Risk and Issue Management
  - Professional risk management approach, tracking mitigation actions and contingency plans
- Milestone Checklists
  - Ensure that all aspects of product development are being progressed appropriately:
    - Software development
    - Hardware development
    - Marketing
    - Market Introduction
    - Sales channels & logistics
    - Customer Service planning



# Professional Project Management :

- Professionally trained Project Managers
  - Relevant background
  - Dedicated project managers
  - Defines project goals, priorities, assumptions
  
- Project Plan & Schedule
  - Defines deliverables, contacts, timescales





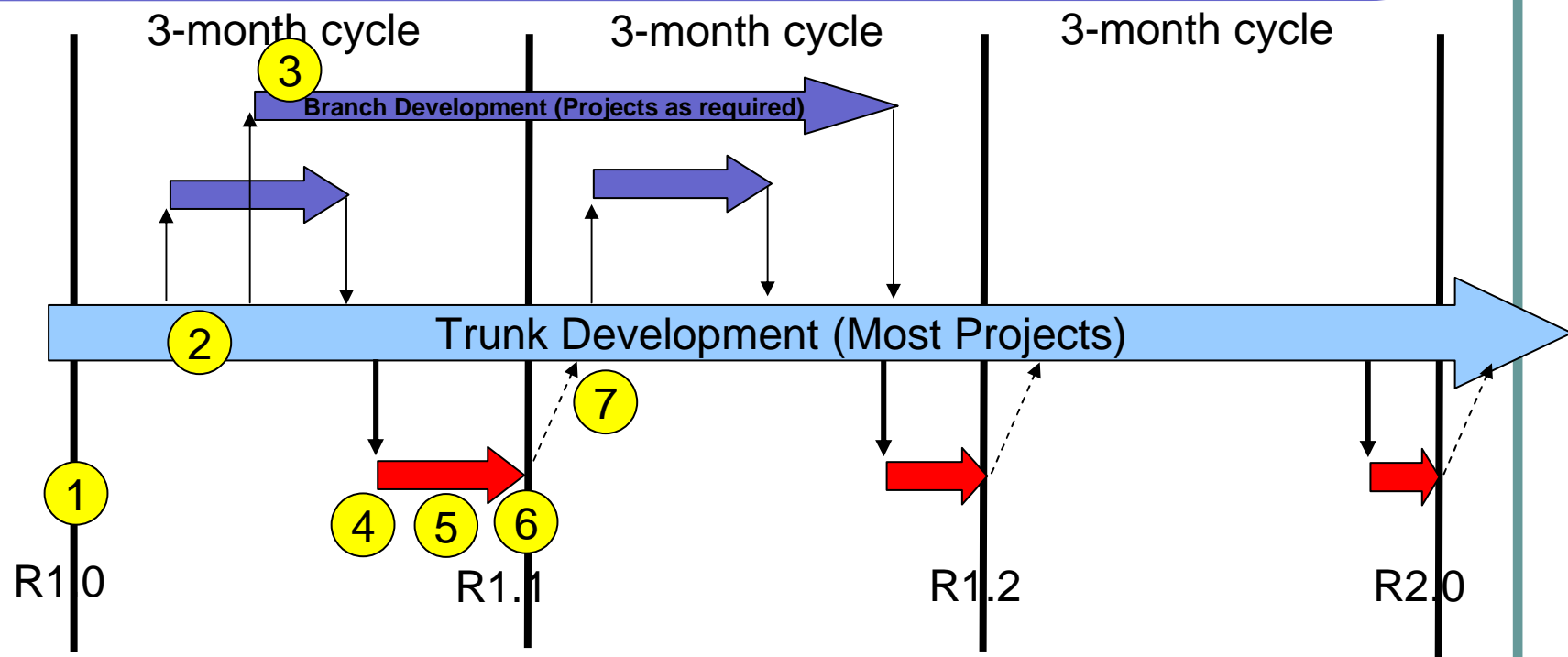
# Writing Effective Scenarios

- Helping all parts of business make a decision
- Use-Cases or Scenarios
  - stories that tell the whole life of the use of your idea by your target customer
  - E.g. suggest an invention!
- This helps everyone understand how the suggested solution will really fit against the scenario
  - Stops wasted extra features (what we don't need to do!)
  - Helps define a target customer
  - Helps determine the business case

# How to keep delivering SW on track?

- What is your strategy for Software Releases?
  - One mega-release
  - alpha, beta, beta2, beta3, ....., beta47!
  - Constant cycle of release
    - Every 3 months?
    - Every 10 features?
  - This is not just an engineering decision
    - Business, customer, engineering together decide with help of PM

# Software Release Cycle (One approach)



- 1: Release Defined – All functionality for next release is defined and agreed
- 2: Development – Projects, minor enhancements and bug fixes applied to trunk. Continuous integration used
- 3: Off-Trunk Development – Used sparingly for projects which may affect other project development and/or continuous integration (e.g. architecture projects)
- 4: Release Feature Freeze – Release is branched from trunk. Feature development for that release frozen
- 5: Release System Testing – Beta releases made at stable points for test. Gold release made at end. **THE AIM IS TO REDUCE THIS TIME PERIOD USING AUTOMATED REGRESSION TESTING ALONGSIDE CONTINUOUS INTEGRATION**
- 6: Release – Gold Release made. = point 1 for next release
- 7: Fix Absorption – Bug fixes made between 4 & 6 are applied to trunk

# Software Development Methods

- Use the most appropriate development method for the project, depending upon:
  - Project Scope
  - Project Risk
  - Clarity of Requirements
  - Project Priorities (Time, Cost, Functionality)
- Aspects of different methodologies may be used as required:
  - Iterative development
  - Agile development methods
    - DSDM (Dynamic System Development Method)
      - Timeboxing
      - Requirement prioritising
      - Iterative testing
    - Rapid Prototyping
  - PRINCE2
- Having a 'Framework' rather than a set of rigid 'Processes' allows flexibility in approach to ensure Project goals are met

**DSDM**<sup>®</sup>  
consortium

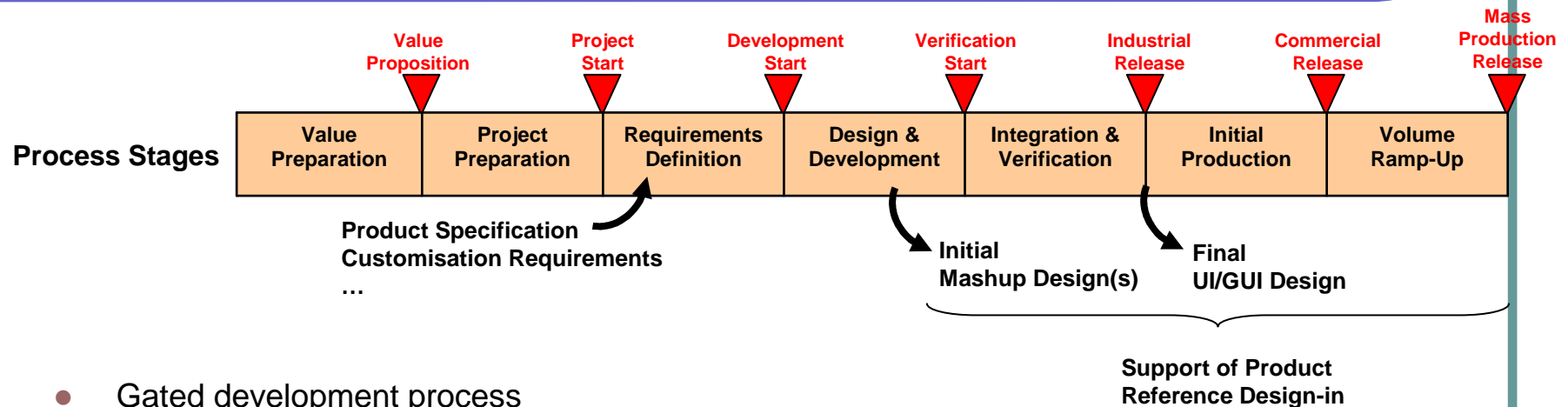
**PRINCE**<sup>2</sup>

# New Product Introduction Process

- Let me code as fast as I can with nothing but a fridge full of cola.....
- You can have it to sell when I am finished .... (which may be a very long time!)



# New Product Introduction Process



- Gated development process
  - Defined progress and decision milestones
  - Allows for different development processes to be used, depending upon the project scope, timescales, risk etc
- Structured environment
  - Defined project goals
  - Defined project team
  - Dedicated Project Manager for development projects
  - Up-front defined deliverable points during development – in addition to gated milestones
  - Controlled project tracking
  - Configuration control for software, hardware designs and documentation
  - Change control process used for approving and tracking changes

# Quality that matches Customer needs

- Innovative companies must have a “Quality Metric” that the PM can rely on.
  - Each product is subjected to comprehensive testing prior to any release
    - Manual, pre-defined unit and system tests
    - Testing all aspects of functionality, including compatibility tests
    - Automated intensive testing
      - Overnight and week-long accelerated life tests
    - Defined usability tests
    - Random end-user testing
    - Customer Scenario testing
  - Must match your target customer needs

# Quality Assurance and Testing

- Quality Management System iteratively developed
  - Initially based on many years experience in the industry (ISO9001 & CMM organisations)
  - Taking Best Practice, ensuring high quality, fast time to market products
  - Revised and updated following project Lessons Learned meetings
  - Detailed architecture and design reviews (hardware and software)
- Testing Process
  - Unit tests and subsystem tests regularly run during development – Each team member has responsibility for overall product quality
  - Continuous Integration builds run overnight, with automated running of Unit Tests and failures flagged
  - Each product has a defined Integration & Test plan
  - Up-front designed tests to ensure
    - Conformance with requirements and use-cases
    - Compatibility across different systems
    - Reliability
    - Performance & Interactivity
    - Accelerated life testing
    - Conformance tests (WHQL, USB, EMC etc)
  - Test Matrix produced for all releases



# I asked my Project Managers what advice they would share

- Startups are about innovation and getting things done quickly. This doesn't mean less management, it means more focussed and more adaptive management
- Startups do not mean no process, or no admin. It means better process, and using what you need, to enable faster turnaround
- The best and biggest companies in the world use processes widely
  - MS define processes that others follow, Google use different processes.
  - ALL use project management!
- The latest techniques do not work in all situations! Agile is not always the best method 😊
- Need to appreciate all other areas of the business – the business need to work as a whole system, not individual silos – good communication, respect and appreciation helps this.
  - Good PM helps maintain this, while allowing engineers to concentrate on what they are good at!

# I asked my Project Managers what advice they would share

- Difference between Programming and Engineering (one is doing what you are told, the other is finding solutions)
- Importance of Engineering Process (western academia tends to emphasise and teach implementation techniques, rather than overarching process)
- Project Management requires a different skillset from Technical Engineering – not all senior engineers make, or want to be, a good PM
- Good Project Management takes time and effort – using an engineer to do this means they aren't engineering!
- Work vs. Progress – they are not the same thing. Don't waste valuable work doing the wrong thing.
- Good PMs have a toolbox of techniques, not a manual to follow

# I asked my Project Managers what advice they would share

- Reacting and planning are two key elements – you need to be able to do both as you can never eliminate either
- Use process to remove the dull, easy (but important) stuff, to allow more time and effort to be focussed on innovating and creating
- Being able to write good C++, Java, .Net is only part of the story (and to be quite honest, a pretty small part – if you understand one language, you can pick up another fairly easily).
  - Understanding (and having experience of) good process is more useful (and takes longer to teach!)
  - Agile, Goal-driven, reporting against deadlines, risks and issues etc – all essential stuff for all businesses – especially startups which work in a high risk and fast moving industry.
- Project Management is common sense – but common sense isn't as common as you'd think!

# Summary

- Innovative high tech companies must
  - Operate with a set of well defined processes, professional project management and detailed testing procedures to ensure projects are delivered:
    - on time to match customer and business needs
    - within budget
    - to high quality levels
  - Provide detailed training and comprehensive support to customers with help and guidance throughout the design, development, market introduction and volume production phases



**Thank you.**