Evolving the Product Management Process to Match Company Growth

Brent Lang

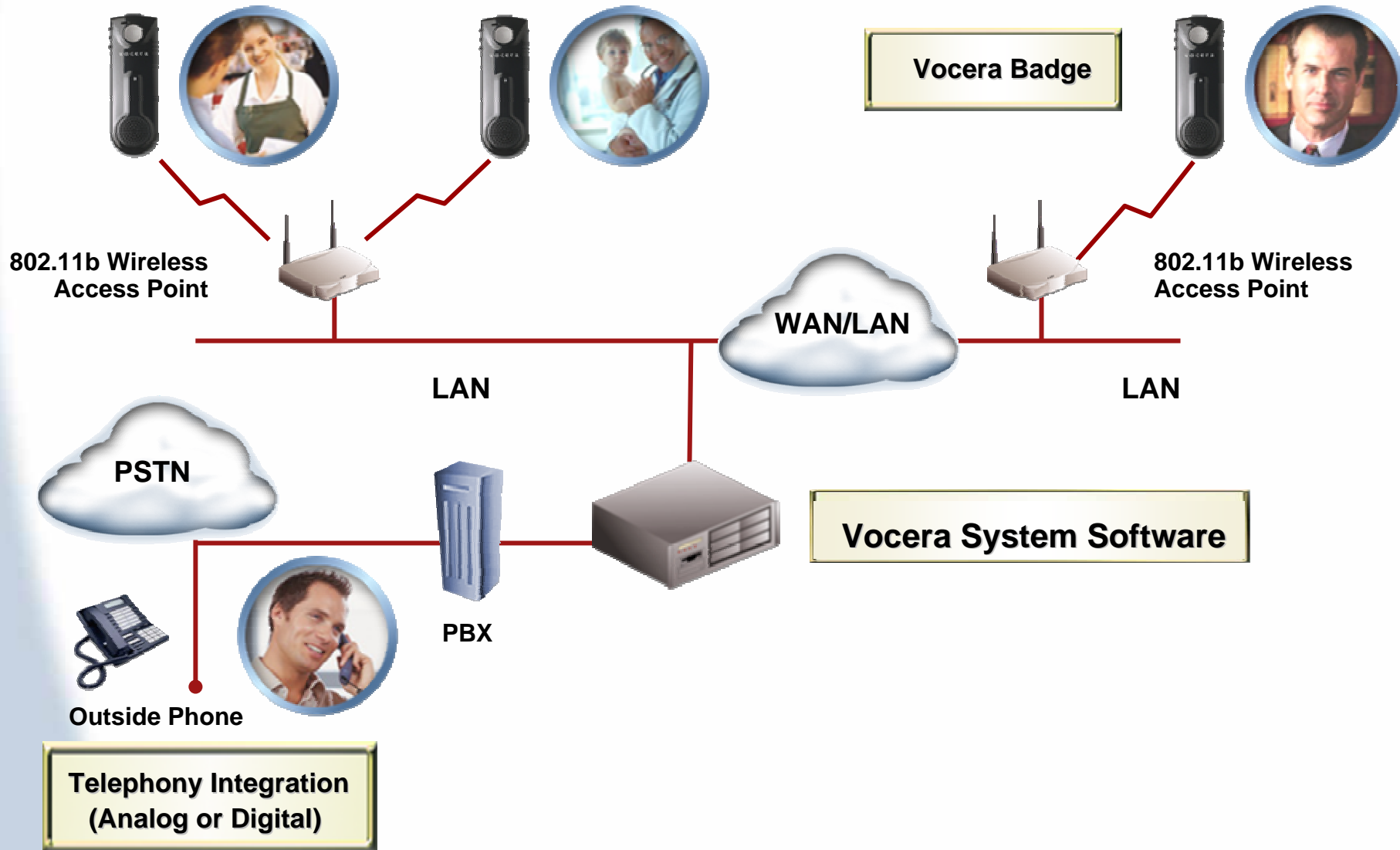Vice President of Marketing

Vocera Communications

Agenda

- Vocera Overview
- What is a PDLC and why do you want one?
- Trade-offs and tensions
- Different kinds of processes
- How do we apply this?

vocera

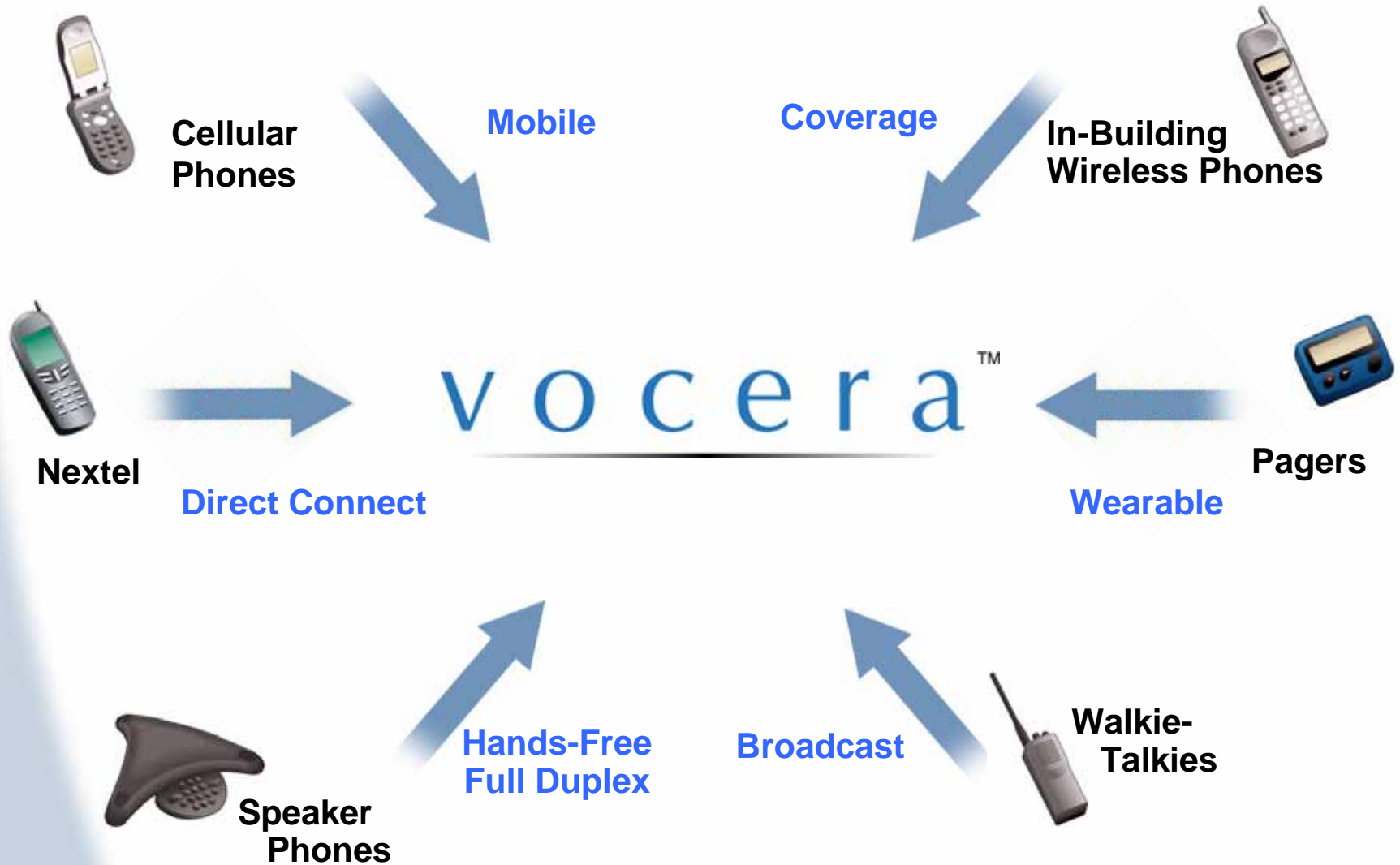# Vocera at-a-glance

Vocera makes the only **wearable, hands-free, instant voice communications** system.

Founded	March 2000
Locations	California, USA (HQ). Australia, New Zealand, U.K., Canada
Funding	Private Venture Capital Funded
Product Shipment	First customer shipments in October, 2002 Revenues growing rapidly
Customers	250 installations (100,000+ users) 200 Hospital installations
Markets	Healthcare, Hotels, Retail, Manufacturing, Libraries

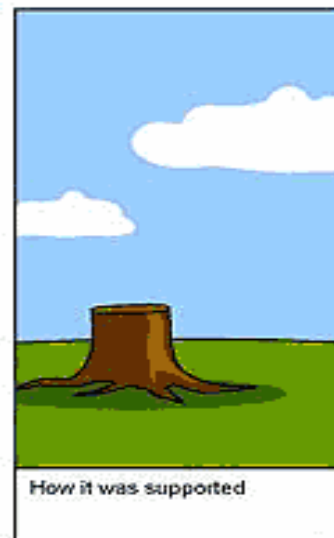# Vocera System

Vocera Badge

802.11b Wireless Access Point

802.11b Wireless Access Point

WAN/LAN

LAN

LAN

PSTN

Vocera System Software

PBX

Outside Phone

Telephony Integration (Analog or Digital)

Value Proposition – the best of...

vocera

Cellular Phones

Mobile

Coverage

In-Building Wireless Phones

Nextel

Direct Connect

vocera™

Wearable

Pagers

Speaker Phones

Hands-Free Full Duplex

Broadcast

Walkie-Talkies
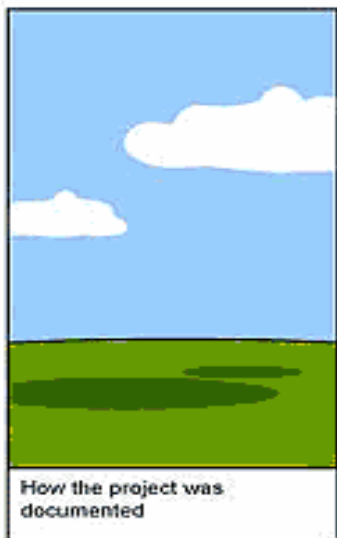
What is a PDLC?

- PDLC = Product Development Life Cycle
  - Simply a description of how to define and build products
  - A defined process to help people work efficiently across the organization
  - All aspects of the process should *add* value to the product delivery
  - It is not process for the sake of process

What we want to avoid

How the customer explained it

How the Project Leader understood it

How the Analyst designed it

How the Programmer wrote it

How the Business Consultant described it

How the project was documented

What operations installed

How the customer was billed

How it was supported

What the customer really needed

Stages of Company Growth

Stage	Description
Founders Rule	Founders vision drives product definition and initial features
Market Validation	Early market research refines the vision and adds new requirements
Customer Priorities	Multiple customer and market priorities must be balanced
Portfolio Planning	Resources must be balanced across multiple products

Tensions of Development Processes

Time to Market		Predictability
Flexibility		Control
Creative Passion	⟷	Stability
Spontaneity		Reliability

vocera
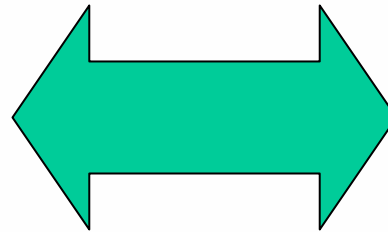
Process Goals

- ## Maintain high quality product
  - Do not sacrifice testing to release "on schedule"
  - Minimize last minute changes
- ## Increase schedule reliability
  - Develop detailed requirements, and work estimates
  - Communicate changes early, give the team time to respond to slips or changes to features
- ## Maintain and enhance innovation
  - Structure teams, and schedules to allow research
  - Allow for changes, but take control of them
  - Encourage discussion of new directions
- ## Accelerate time-to-market
  - Understand what the customer "really" wants
  - Carefully prioritize features and focus on the highest value
  - Maintain the quality to minimize maintenance work

vocera

Different Types of Processes

- The two primary "competing" approaches
  - Waterfall, or phase oriented, top down,
  - Agile, or lightweight, bottom up
- Both have advantages and disadvantages
- They are processes, and are not considered "cowboy" coding or hacking

Waterfall

- Waterfall emphasizes planning, and very rigorous requirements definition.
  - A great deal of the project cycle is spent in the requirements and design phases, before coding begins. Very structured.
- The farther downstream you get the more difficult it is to change the plan
- Very precise as to what will be built, and what it will do
- Strict acceptance criteria between phases
- This methodology is considered inflexible, and not the best approach to SW that needs to change quickly
- It should be iterative
  - Usual "derogatory" reference to it does not take that into consideration

Waterfall

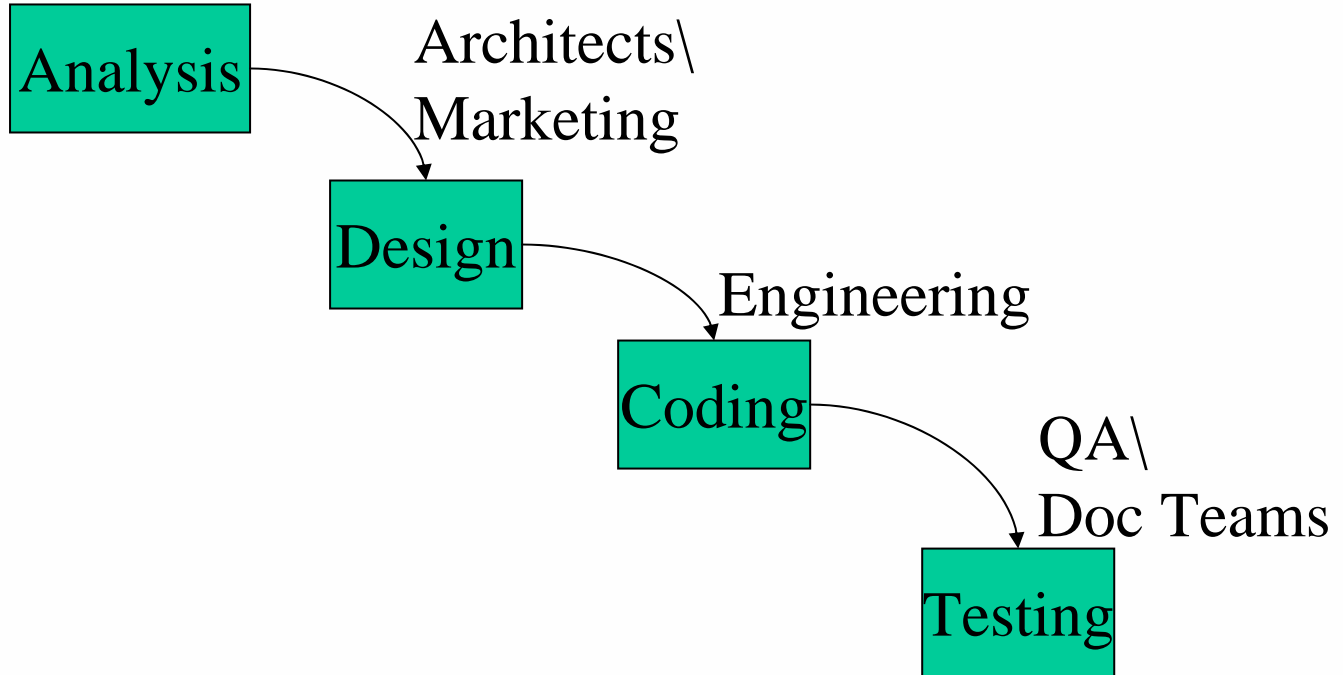Marketing\
Business Teams

| Analysis |

Architects\
Marketing

| Design |

Engineering

| Coding |

QA\
Doc Teams

| Testing |

Waterfall Methodology

- **Advantages**
  - Good progress tracking due to clear development stages. Prediction of hitting future milestones is good.
  - Milestones and deliverables can be clearly identified.
  - Project Management and control is facilitated by the need to complete each stage before moving to the next.
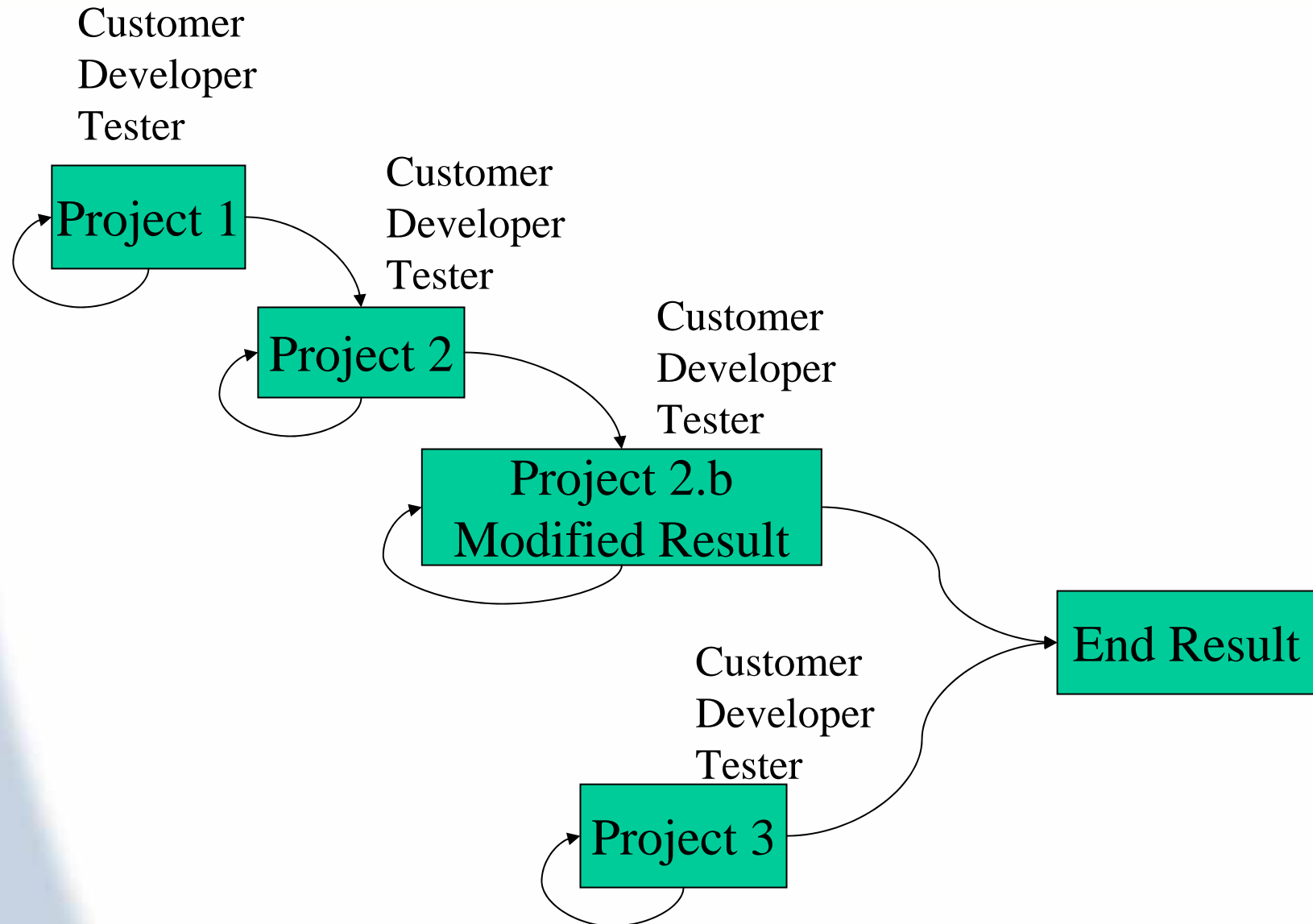 - Good for large projects that need reliability, and accuracy

- **Disadvantages**
  - Inflexible partitioning of the project into distinct stages makes it difficult to respond to changing customer requirements.
  - Little "customer" interaction during process. Once design begins it is assumed the end result will be correct
  - A great deal of focus is on the process, not the people or the product, the processes can become to great and distract from the delivery.

Agile

- Emphasis is on change, and adaptability.
  - Work from prototypes to validate functionality, and get to coding quickly.
- Small teams working on small projects very quickly
- Work is constrained in a "time box" and the project is reviewed at the end of the time box
- After each piece is complete the code should be ready to ship. Teams work through the design, coding and testing simultaneously
- Highly iterative since each small piece of functionality is a complete mini-project
- Methodology suggests two engineers take turns being tester and developer,
- Works well for projects that have requirements that change often

Agile, Iterative, Lightweight

Customer
Developer
Tester

Project 1

Customer
Developer
Tester

Project 2

Customer
Developer
Tester

Project 2.b
Modified Result

Customer
Developer
Tester

End Result

Customer
Developer
Tester

Project 3

vocera

Agile

- **Advantages**
  - Very flexible, fast response to change
  - Emphasizes people over process
  - Lots of customer interaction and input
  - Focus on small projects, keep the code stable and running
- **Disadvantages**
  - Focus is on adaptation, not prediction. Systems with large interdependencies are at risk (you wouldn't want aircraft control SW written this way)
  - Requires small teams of senior engineers
  - Can be difficult to work into a large organization
  - Requires all participants to be co-located
  - Difficult to document
  - Difficult to coordinate large projects that require pieces to fit together

What Did We Do?

- Vocera product is an interesting candidate for both styles of development
- Waterfall appears to be a good choice.
  - Software is large and complex
  - Hardware platform is complex
  - Our customers need predictable, stable releases
- However, an Agile approach could apply
  - We are a small group of talented close knit people
  - The technologies we deal with can be very dynamic
  - We also wanted to keep the innovation alive in the company and Agile is a good way to bring ideas to reality very quickly

Take The Best From Both Worlds

- Waterfall philosophy:
  - Predictability.
  - Scrutiny of requirements
  - Structured in depth testing
- Agile
  - Adaptability and innovation
  - Dynamic team interaction
  - Respond to customer and market requests.
  - Stable code base
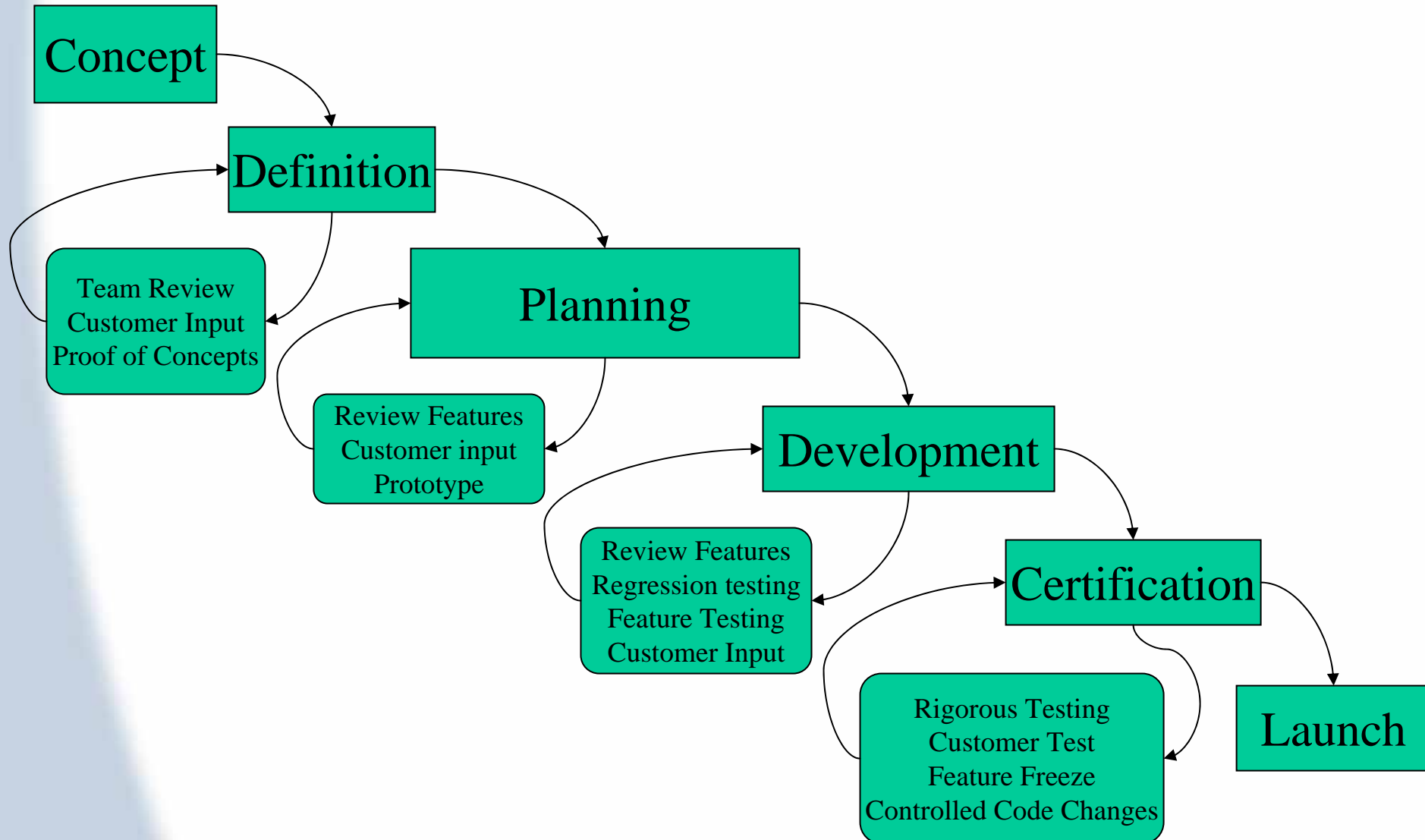
The Solution! Mix Waterfall with Agile

Waterfall

- Need well researched and defined set of requirements
- Define basic Waterfall phases (Concept, Definition, Design, Develop, Test, Launch)
- Break down large features into prioritized, detailed tasks
- Require structured "exit" criteria from each phase. This helps everyone understand what is expected

Agile

- Incremental delivery of features.
- Deliver the features in complete form staggered through the development cycle
- Repeat Requirement review at each phase, keep Marketing and the customer in all phases
- Test early, test often
- Automated unit testing. Regression tests run every night, on every build.

The Modified Waterfall Process

vocera

Concept

Definition

Team Review
Customer Input
Proof of Concepts

Planning

Review Features
Customer input
Prototype

Development

Review Features
Regression testing
Feature Testing
Customer Input

Certification

Rigorous Testing
Customer Test
Feature Freeze
Controlled Code Changes

Launch

Key Questions for Phases

v o c e r a

Phase 0	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Concept	**Definition**	**Design & Planning**	**Development**	**Certification**	**Launch**
What are the themes of the next release that make business sense?	What specific features can we deliver by time X, with 50% confidence?	What is the final schedule, design and delivery date?	Are we on track, and building what we thought we would?	Are we ready to ship?	Are the internal and external customers, ready for release?

Organization Structure

- Product Council
  - Owns approval for all new projects
  - Updated by Project Team on project status
  - Reviews and approves project proposals and all phase transitions in project cycle.
  - Sets priorities on projects and resolves cross-functional conflicts.
- Project Teams
  - Owns the implementation and management of the projects.
  - Could be several Project Teams running at one time
  - The Project Teams have managers (or representative) from all the groups involved in the release

Team Structure

Product Council

Phase Reviews

Priority conflicts and
roadmap change requests

Project team

Project team

Project team

Eng.

Services

Pubs

Ops

PM's
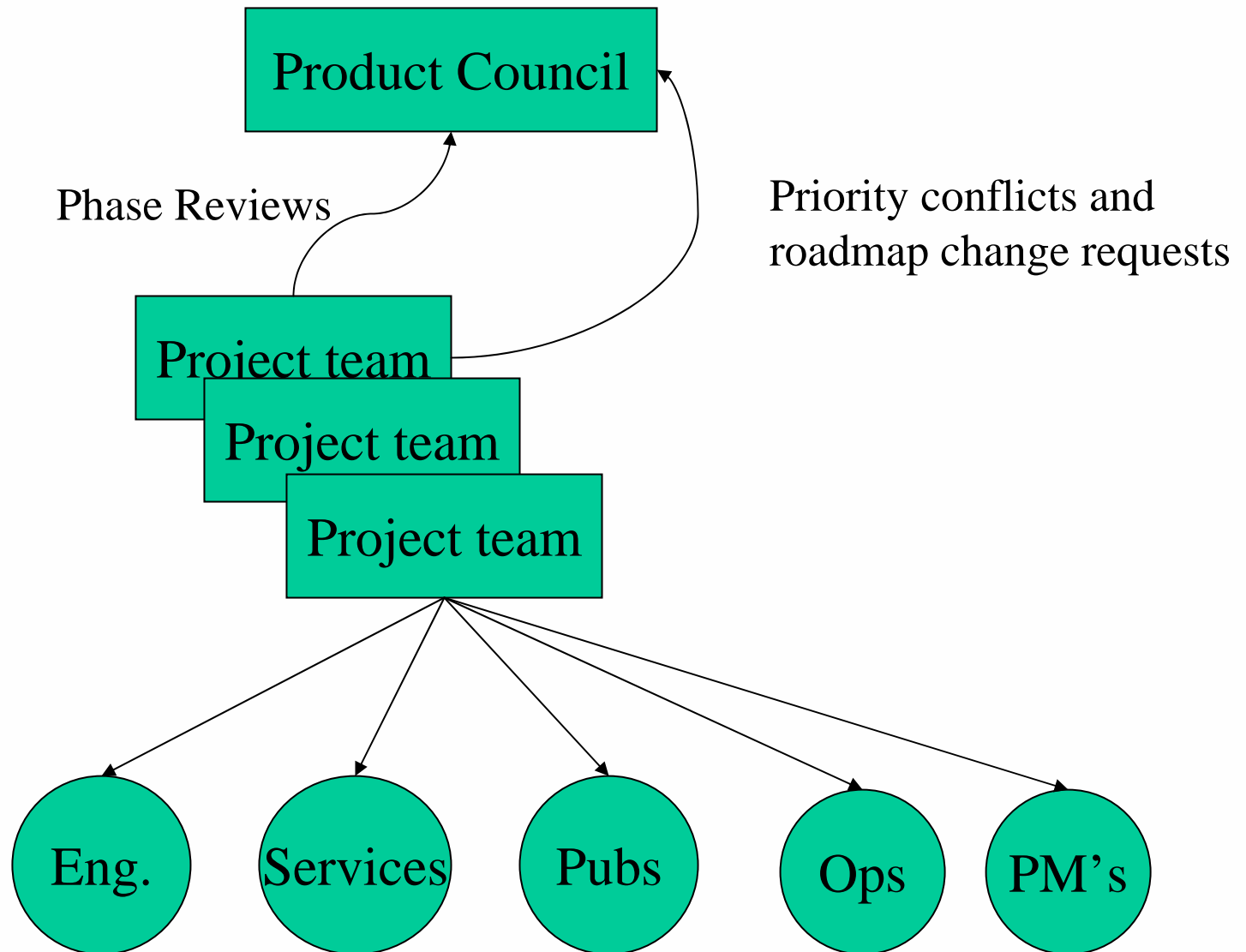
Current Project Priorities 2-15-06

Priority	Project	Phase
1	Skywalker	Development
2	Dilbert	Sustaining
3	King Kong	Planning
4	Aladin	Definition
5	Gandalf	Planning
6	Rupert	Development
7	Garfield	Certification
8	Snoopy	Concept

Conclusions

- Process must match company objectives and stage of development
- Resistance will occur if initial process is too heavy. Entrepreneurs hate process.
- Need to balance time to market and flexibility with predictability and control
- No one right process
- Needs to be simple to manage and remember