II. Testing Requirements Formats

Moe: I know 20 ways to test business requirements.

Joe: Well, there's the regular way...

Moe: 21 ways!

The "Regular Way"

- User review
- Management review
- Supervisory review
- Peer review
- QA Group review

Exercise:
Read the Business Requirements and review them quickly in your team.

Exercise: Review Requirements 1 of 2

Testore, Inc. is a small, growing chain of discount retail clothing stores. Each buyer is responsible for the performance of one or more classes (e.g., long-sleeve dress shirts) within one or more departments (e.g., men's shirts, women's dresses). Buyers buy closeouts, overstocks, samples, and irregulars. The buyer has total discretion over what items to buy, and no other buyers buy items for the same class. The buyer handwrites a purchase order (P.O.) to a vendor (e.g., Ralph Lauren) for up to 100 items, all for a single class within a department. The buyer usually knows the vendor number, but may not, or may buy from a new vendor who has no number.

For each item, the P.O. includes the vendor's unique ID (style number), Testore's stock keeping unit (SKU--item number--if known, and many items are purchased only once and thus do not already have SKUs), item description, the various quantities for each of the several stores, unit cost to be paid to the vendor, suggested list price, retail price Testore will charge for the item, total quantity, extended cost (unit cost times quantity), and Testore's extended retail price. The buyer then totals the costs and retails for the entire order.

Exercise: Review Requirements 2 of 2

P.O.s are tedious to write and slow and expensive to get into the central computer system. A buyer may write many orders on a two-week buying trip, all of which must be data entered by a clerk when the buyer returns. Merchandise often is received before its P.O. has been entered into the computer. On the P.O., buyers may detail orders for an SKU by size or color; but the computer system has only one record per SKU, so quantities must be totaled across sizes/colors before entry. Buyers may not know appropriate vendor or SKU numbers, which can delay entry or cause the computer system to assign a new SKU (based on a slightly differently spelled vendor style) to an item which already is in inventory. Buyers may misbuy because they are not sure of current on-hand stock or sales volume for items. A buyer can exceed available budget ("open to buy") for a class, which changes based on actual purchases and sales at retail.

Management wants each buyer to have a notebook computer and portable printer for issuing accurate and in-budget P.O.s without being connected to HQ. Each day the buyer will up/download new/changed data with the HQ computer.

What Limits the "Regular Way"

- Illusory presumption of assuring correctness
  - Based on what was said, not what should have been said (dictation vs. content)
  - Weak passive static review by people with insufficient knowledge of subject area
  - Easily overlooks things due to no systematic procedure to guide the review, not sure what to look for or how to do the review
- Inadequate feedback to guide improvements ("Do it over. Do it better.")

Strengthening the Review Process

✪Use formal technical review
- objective is to find all potential problems
- preparation, participation, accountability
- roles--moderator, recorder, presenter
- written summary and detail issues reports

✪Predefine topics & specifics to examine
- Organization's prescribed format (e.g., IEEE)
- Presumed functions and common functions

- - - Foundation Techniques - - -

✪ *Making Sure They* Are *Requirements*

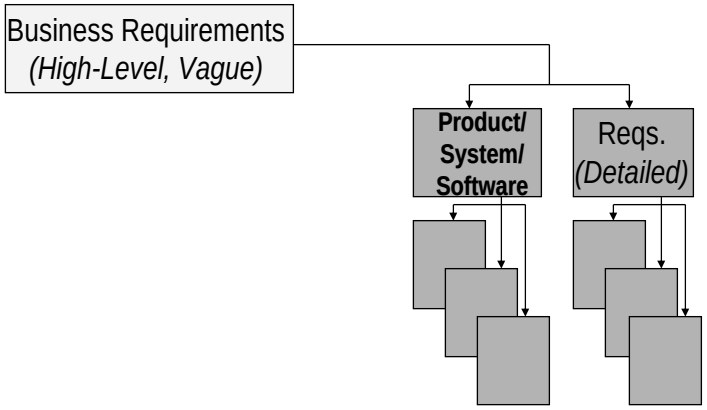
- In user/customer language
- **<u>What</u> must be delivered to provide value**
  - – not <u>how</u> (design/technology) or desires, *except*
    - » required technical environment it must fit
    - » operational style preferences it should meet
    - » purposes, objectives, and expected benefits to clarify and place requirements in context
  - – Qualitative characteristics

➲ Two Types of Requirements:

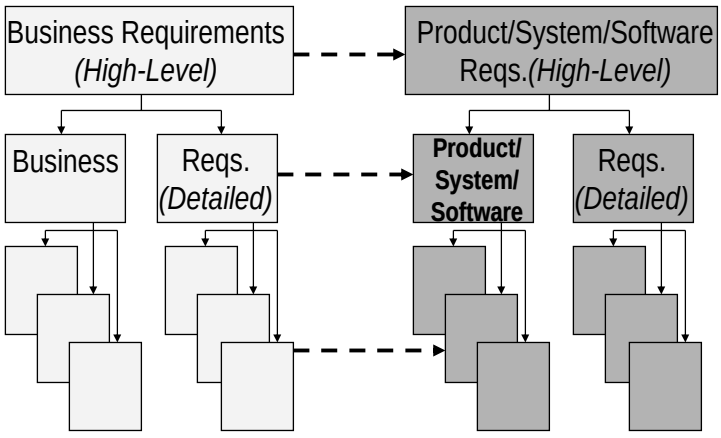
<u>Business/User</u>	<u>Product/System/Software</u>
• Business/user language & view, conceptual; *exists* within the business environment • Serves business objectives • ***<u>What</u>*** business results must be delivered to solve a business need (problem, opportunity, or challenge) and provide value when delivered/satisfied/met	• Language & view of a *human-defined product/system* • **One of the possible ways *<u>How</u>*** (design) presumably to accomplish the presumed business requirements • Often phrased in terms of external functions each piece of the product/system must perform to work as designed (Functional Specifications)

Many possible ways to accomplish

Even Requirements "Experts" Think the Difference is Detail



When Business/User Requirements Are Detailed First, Creep Is Reduced



✪ *Requirements Must Be Deliverable (and Testable)*

- Observable and measurable vs. desires
  - subjective, qualitative factors in operational objective terms
  - volumes, frequencies, timeframes, speeds
- Realistic and attainable (it can be done)
  - with reasonably available technology, skills
  - in a reasonable time frame (inherent)
- ✪ Write test cases to demonstrate them

✪ *Requirements Must Be Reviewable*

- Written
- In understandable language
  - common in user/customer industry, or explained
  - in sufficient detail to stand on own
  - can be supported by examples/diagrams
- Specific (e.g., itemized vs. jumbled narrative)

✪ *Requirements Must Be Clear and Structurally Complete*

- Stated positively (not absence of a negative)
- Terms: known meaning, identifiable, consistent
- Assumptions documented
- Stand on own without internal contradictions or vagueness/ambiguities

- ✪ Consistent with (suitable) objectives
- ✪ Identifies major functions, limits
- ✪ Alternative consequences defined
- ✪ [Magic words--must, shall, will (no TBD)]

Exercise: Use the starred guidelines to re-review the Business Requirements

✪ *Use Cases Can Be, But Seldom Are, Business Requirements*

"Two-Column" Use Case Example

U1. Enter Vendor Number	R1.1	Display vendor name, address
	R1.2.	Vendor not found
U2. Enter vendor name	R2.	Display list of vendors by name
U3. Scroll list and select	R3.	Display selected vendor's info
U4. Exit name search	R4.	Switch to Vendor Add mode
U5. Enter vendor info	R5.	Add vendor to database

Use Cases Can Be, But Seldom Are, Business Requirements (cont.)

- "How an actor interacts with the system"
  - Needs to be the Business System, not a technical design guessed from no knowledge.
  - Include things regardless of whether or not expect them to be automated.
  - Not just user instructions for a presumed GUI.
- Describe "Should be" not "as is" process
- Leave no gaps between related Use Cases
- Define and incorporate business rules
- Address quality factors and performance levels
- Results, not just activity

✪ *At Every Hierarchical Level Is an Itemized Business Deliverable "What" that Provides Value*

*Exercise: Review Testore's Business Requirements and translate them into a **hierarchical itemized** list of the specific **business deliverables** ("**whats**") which the completed, working system must produce in order to **provide value**. For example:*

1. Buyer can find, confirm/select, and automatically retrieve the vendor number, name, and address for any vendor the buyer currently does business with:
   a. By exact vendor number.
   b. Alphabetically by partial or full vendor name.
   c. By full/partial vendor name alphabetically within zip code.