TIM 50 - Business Information Systems

Lecture 15

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UC Santa Cruz
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Outline

- Announcements
- Components & Industry
- Student Presentation(s)
- Standardization
- MySQL

Class announcements

- Assignment 3 out today
- Wednesday 11/16:
  - ??
- Reading for next class:
  - Ch. 15.3.1 - 15.3.3, 15.3.6, 15.4 of Messerchmitt (pp. 426-430, 432-437)

Student Presentations

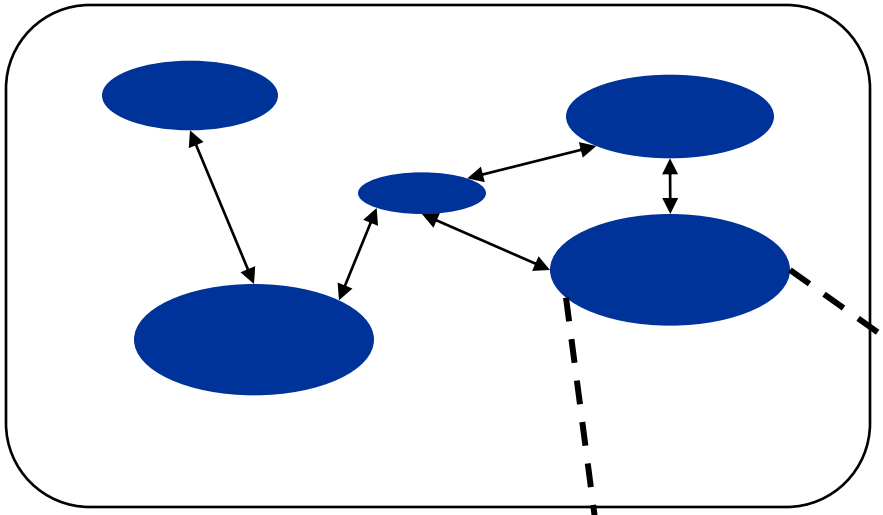
Today:

Natalja Robinetts (Sun)

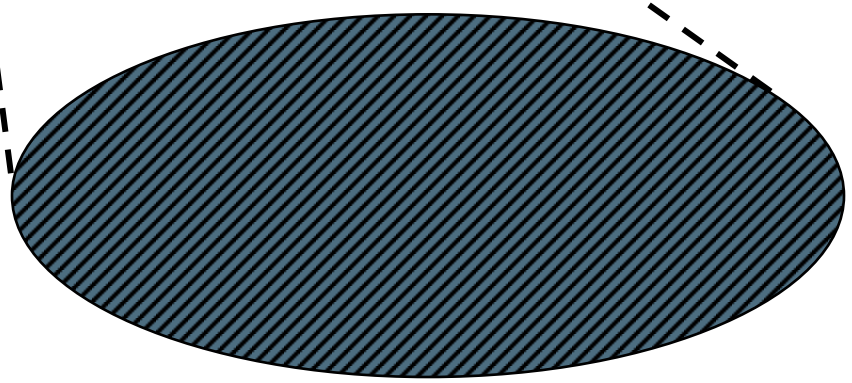
Components, Suppliers

Components (Examples?)

Component: A subsystem purchased "as is" from an outside vendor



(Alternative – building your own subsystem)



A component implementation is encapsulated (although often configurable)

System Integration, Emergence

System Integration:

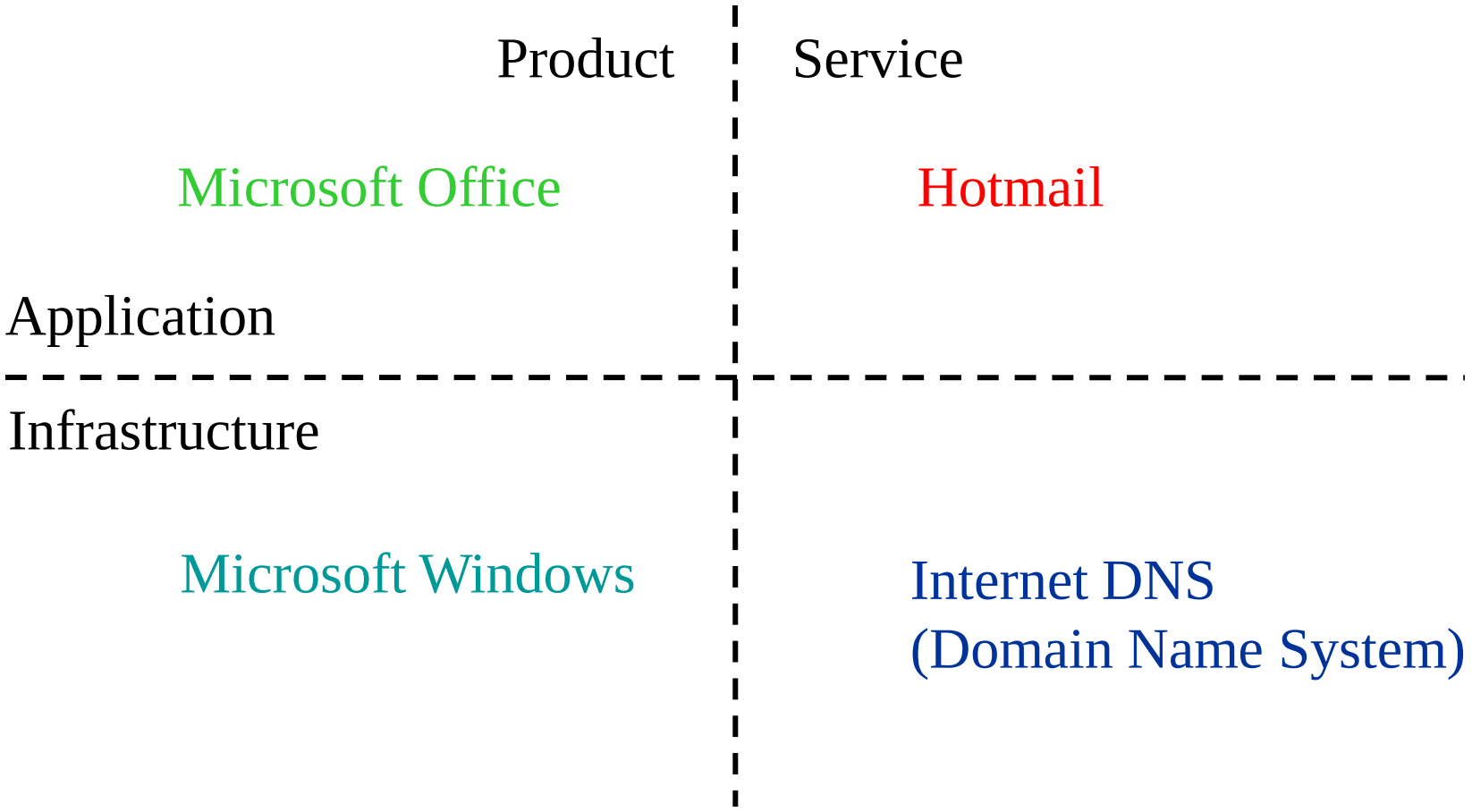
take the components, add custom developed sybsystems, make them interact → reach higher level goal

Emergence: new capabilities and functions of a system that sybsystems and components could not have provided bythemselves.

Supplier Types

- Three types of infrastructure/application suppliers:
  - Component Suppliers
  - Custom Subsystem Developers
  - System Integrators
- (Some suppliers are 2 or even 3 of above.)

Four possibilities (examples)



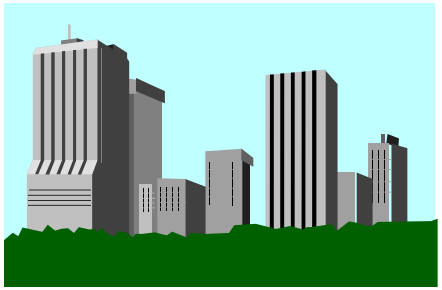
Application Service Providers

- Two types
  - Bundled
    - An infrastructure provider bundles applications with their infrastructure
      - Example: AOL, telephony service providers
  - Unbundled
    - A provider of an application service without providing an infrastructure service
      - Examples?

Examples of unbundled ASP model

- Web-based calendar (e.g. Yahoo, Google)
- Web-based email (e.g. Hotmail, Gmail)
- Web-based stock trading (e.g. Charles Schwab)

Application acquisition



Application

- Develop internally
- Buy as product → Software supplier
- Contract development → Outsource developer
- Product w/ customization → Supplier, consultants

The changing industry structure

Stovepipe vs. Integrated Infrastructure

Stovepipe Architecture

---or---

Turnkey Solution

- Single supplier provides all encompassing solution
- (complete with infrastructure)

Application and Infrastructure

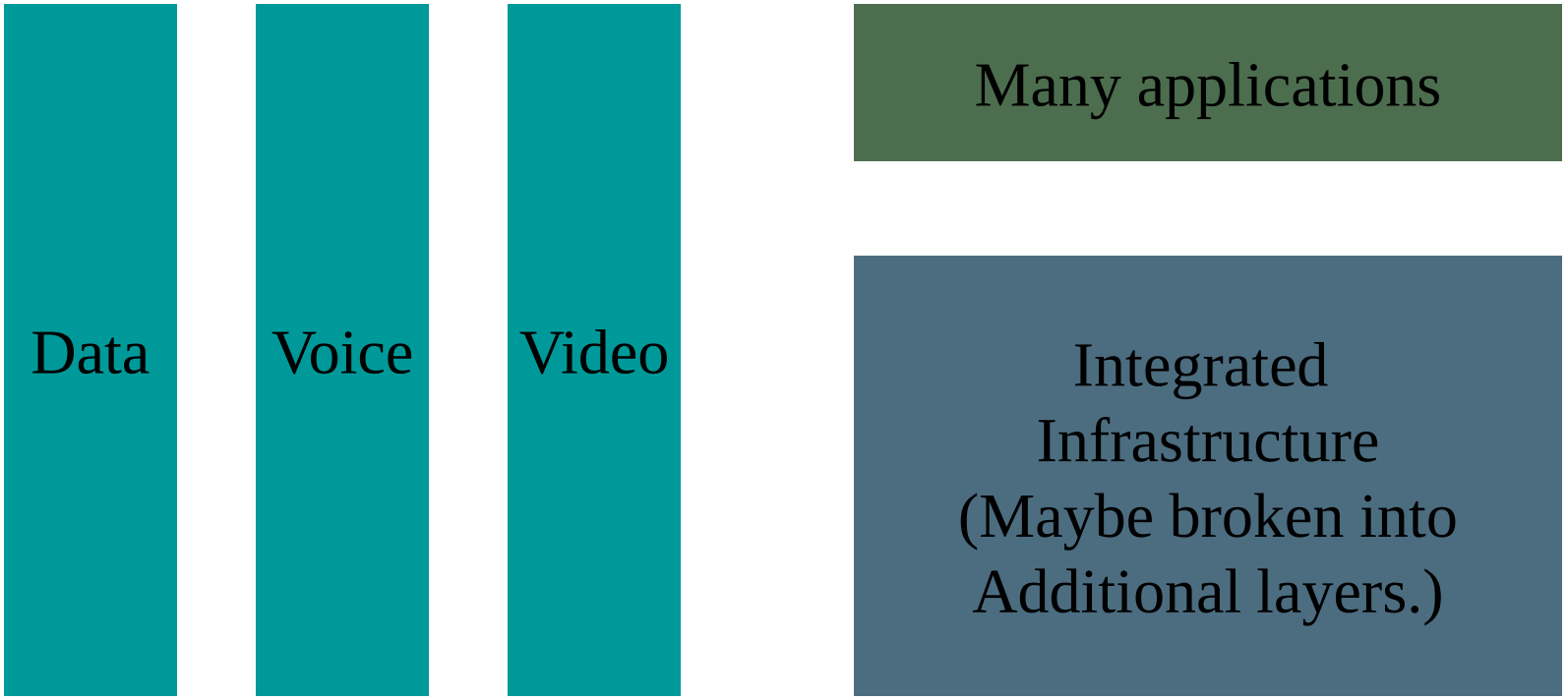
Integrated Infrastucture

Separate infrastructure that can support many applications

Application

Infrastructure

From stovepipe to layering



Stovepipe vs. Integrated Infrastructure

- What are some examples of each?
  - Telephone network
  - Broadcast tv
  - Internet
  - Pc
- What are the advantages of each approach?

Vertical Integration - Diversification

- Two approaches for companies wishing to expand their product offerings
- A company is ***vertically integrated*** when it makes rather than buys the subsystems in it's products. Example: IBM
- A ***diversified*** company produces products across different industry segments. Example: Compaq

Less Vertical Integration - More Diversification?

- Why do customers favor less vertical integration?
  - Prefer competition amongst component suppliers
  - Mix and match components – free choice, but at a price
  - Reduced lock in
- Disadvantages??
  - Customer needs to integrate components from different suppliers.

Less Vertical Integration - More Diversification

- Why do customers favor diversification (in the application space)?
  - Reduce coordination costs by having to deal with fewer suppliers.
  - Fewer vendors overall ➔ less chance of toxic interactions

Standardization

Purpose of a standard?

- Allow products or services from different suppliers or providers to be interoperable

Scope of a standard

- Included:
  - interfaces (physical, electrical, information)
  - architecture (reference model)
  - formats and protocols (FAP)
  - compliance tests (or process)
- Excluded:
  - implementation
  - (possibly) extensions

The Standardization Process

- Before something becomes a standard requires….
  - recognition of its need by a standards body/industry/government
  - commitment of monetary and human resources by participants
- Usually, is an ongoing process
  - Refinements/Extensions

Examples:

ISO: http://standards.iso.org/ittf/PubliclyAvailableStandards/

W3C: http://www.w3.org/

The Standardization Process

- Each organization participates in Working Groups/Committees of interest
  - Hold periodic meetings for debates/arguments/negotiation
  - When reaching a consensus, publish a RFC (Request for Comments) draft
  - Others can give feedback/Send comments etc.
  - The committee should answer to all comments and incorporate needed changes
  - Time-consuming process
- Results in extensive documentation and sometimes in system prototypes
- Usually standards evolve
  - Backward compatibility (e.g. MPEG)
  - Compatibility with existing standards (e.g. XQuery, XSLT based on XPath)

Some issues

- Slow and cumbersome process
- Once a standard is set
  - becomes possible source of industry lock-in; overcoming that standard requires a major advance
  - may lock out some innovation

Why do companies participate?

- Influence the standard
- Gain expertise and implement prototypes
  - Faster time to market than competitors
- Gain intelligence about competitors
  - That might be part of the standardization body as well
- May benefit financially through patent protection and royalties
  - Maintaining ownership of proprietary technology
- Many companies contribute their expertise to design something bigger

Types of standards

- *de jure*
  - Sanctioned and actively promoted by some standardization body, or by government
- *de facto*
  - Standard practice
  - Dominant solution arising out of the market, OR
  - Recommended by voluntary industry standards body

- Examples?

Examples

de jure

- GSM (global for mobile communication),
- ISDN (Integrated Services Digital Network) Telephone interface

de facto

- Windowed GUI
- Java
- Internet protocols

Voluntary industry standards body

- IEEE (Institute of Electrical and Electronic Engineers)
- IETF (Internet Engineering Task Force)
- EPCglobal (RFID standard for UHF)

Industry consortium

- W3C (World Wide Web Consortium)
- SET (Secure Electronic Transactions)

The changing process

- As technology and industry move more quickly, the global consensus standards activity has proven too unwieldy
  - e.g. ISO
- "New age" standards activities are more informal, less consensus driven, a little less political, more strategic, smaller groups
  - e.g. W3C, IETF, WAP
- Programmable/extensible approaches for flexibility
  - e.g. XML, Java

Reasons for change

- From government sanction/ownership to market forces
  - Increasing fragmentation
  - Importance of time to market

Open vs. Proprietary Standards

- Open standard – a standard that is well documented, unencumbered by intellectual property rights and restrictions, and available to any vendor
  - e.g. Internet protocols
- What are the advantages?
- What are the disadvantages?

Standards applied to Business Processes?

- Can you standardize business processes?
- Yes!:
  - ISO 9000
    - A set of standardized business processes for Quality Management.
    - Supports TQM (Total Quality Management)
  - RosettaNet
    - A set of standardized business processes, and accompanying standardized data interfaces/formats for conducting e-business.
  - BPEL (Business Process Execution Language)
    - An XML-based language for the formal specification of business processes and business interaction protocols

The role of Venture Capital in Computing

- Start-Ups: Open interfaces allow small firms to contribute components without having to develop entire solution

- High risk for VCs
- Diversification
  - Each VC funds multiple start-ups
  - Each start-up funded by multiple VCs

- Is this model successful? For the start-up? For the VC? For the customers? Why?

mySQL Case

mySQL

What does mySQL make?

How Successful is mySQL?

- Visibility: Fortune magazine, more mentions on www
- Reaction from giants
- Revenue growth 2001 700k, 2002 6.2m, 2003 10m
- Good performance reviews
- Recent SAP alliance
- But Market share tiny:
  - $10 million out of $10 billion market!

- Why Success?
  - Good Technology
  - Large DBMS bloated with features most don't need
  - Innovative OSS model

mySQL

How does OSS work?

Two Types of License:

- GPL (General Public License (GNU))
  - Free
  - No Support
  - Any software that uses MySQL as a module must itself be made GPL-compliant
- Commercial License
  - Support
  - Could be distributed with non-open source software
  - Not Free:
    - MySQL: Classic $250, Pro $495 (for ~ 50 users)
    - Compare to:
      - MSFT $3150 single proc for 50 users
      - IBM $33000 single proc for 50 users
      - Oracle $40000 single proc for 50 users

Aside: DB's in different software stacks

General Software Stack	ERP Software Stack	Web Application Software Stack	Banking Software Stack
Application	**SAP** Or Oracle, Axtapa, etc.	**Proprietary Business Logic** **Apache Web Server**	**Proprietary Banking App.**
Middleware	**Oracle** or MySQL, IBM, etc	**MySQL** or other DB	**Oracle** or other DB
Operating System	**MS Windows** or other OS	**Linux** or other OS	**IBM z/OS** or other OS

- Which companies are competitors?
- Which are complimenters?
- Which are both!?

mySQL

- Which segments of market is mySQL strong in?
  - Large Companies or Small Companies?
  - Web applications or Critical Enterprise data?

- Why would a major enterprise want to pay so much more for an Oracle or IBM DB
- How should MySQL proceed? What are the advantages/disadvantages?

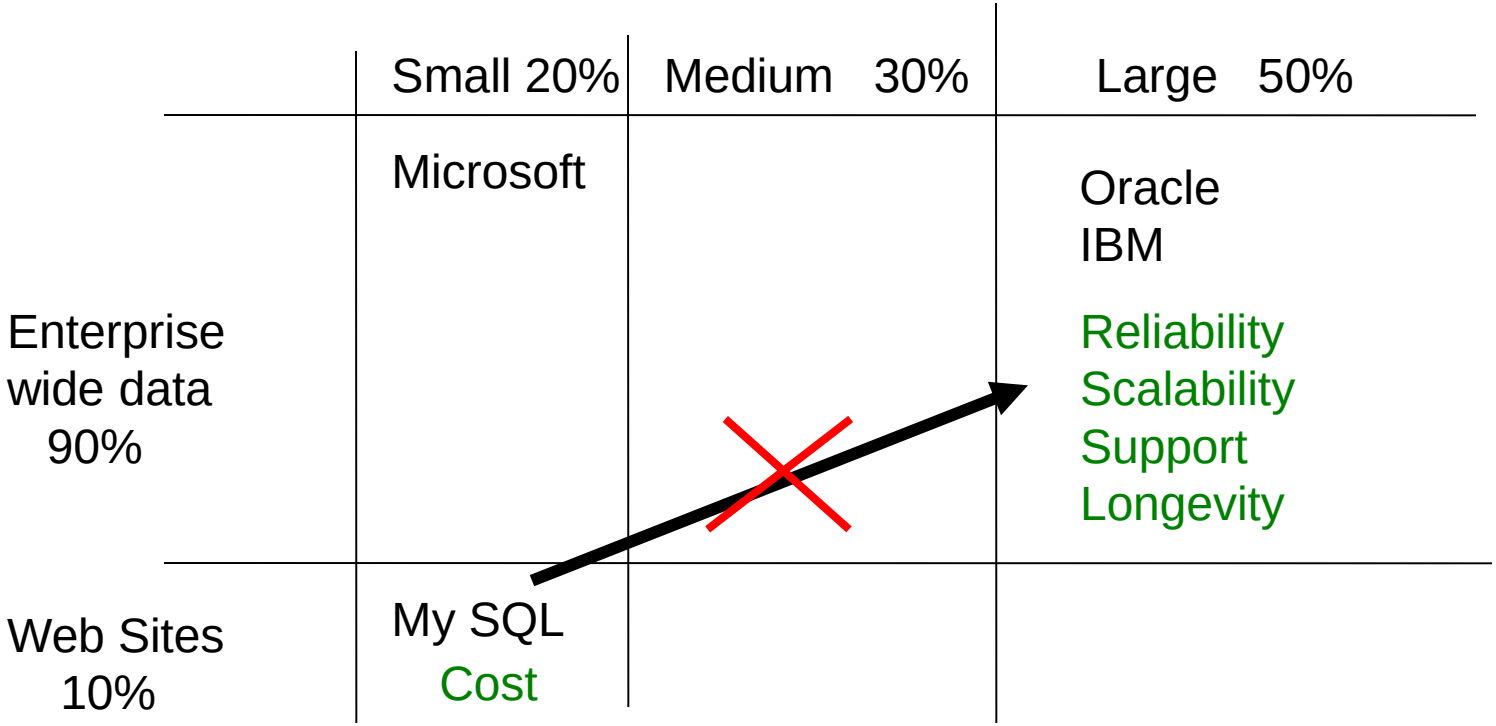
My SQL: market

	Small 20%	Medium 30%	Large 50%
Enterprise wide data 90%	Microsoft		Oracle IBM Reliability Scalability Support Longevity
Web Sites 10%	My SQL Cost		

How should mySQL grow in order to meet it's stated goal of getting to $100 million In revenue?

Figure Adapted from "Teaching Note for MySQL Open Source Database," 6/1/04, Stanford GSB.

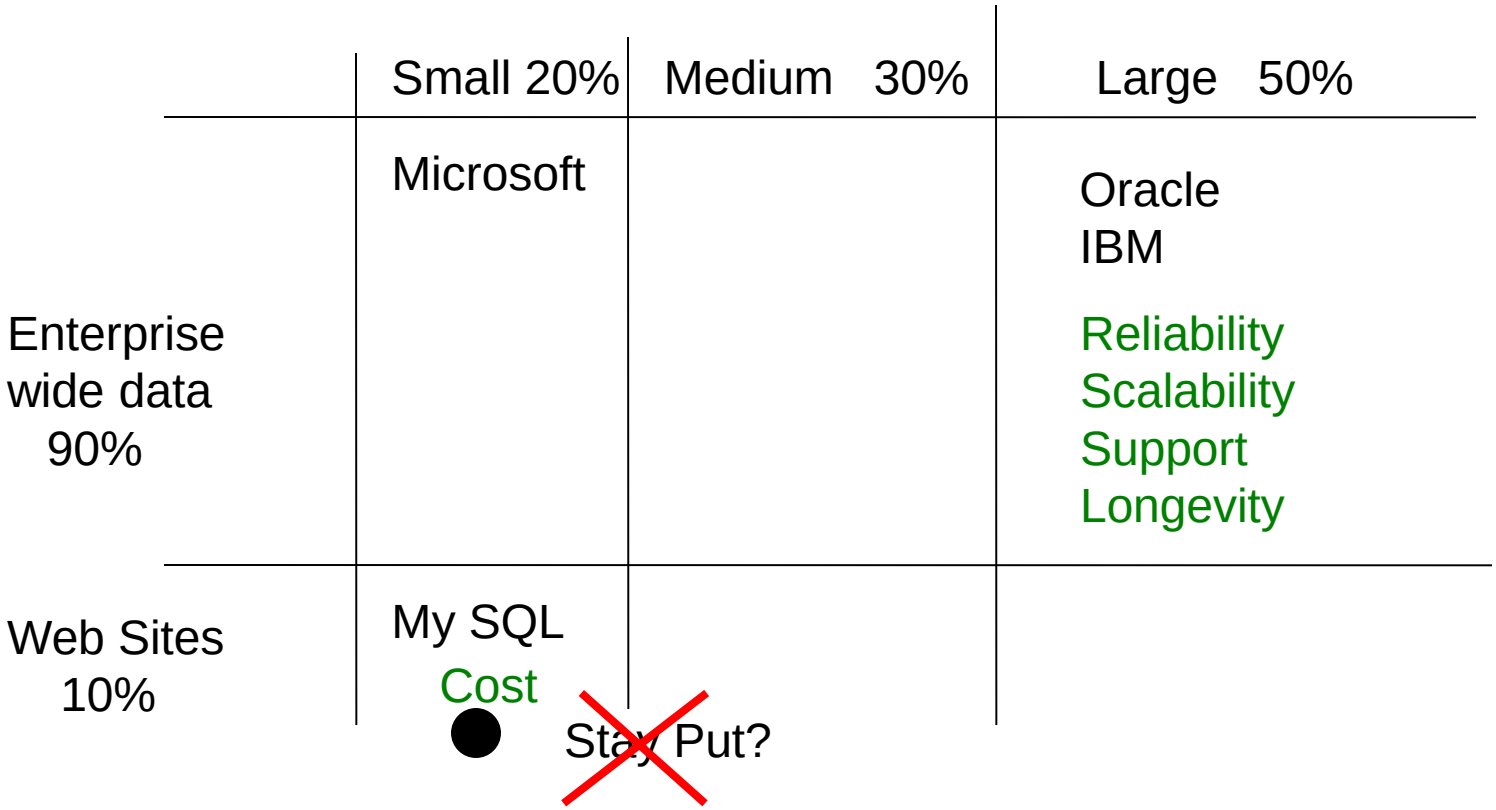
My SQL: Growth Strategy



- - Lack of Brand identity in this segement
- - MySQL lacks the organization to offer support
- - Large enterprises have high switching costs

Figure Adapted from "Teaching Note for MySQL Open Source Database," 6/1/04, Stanford GSB.

My SQL: Growth Strategy



- - Not a big enough market to reach stated $100 million goal.

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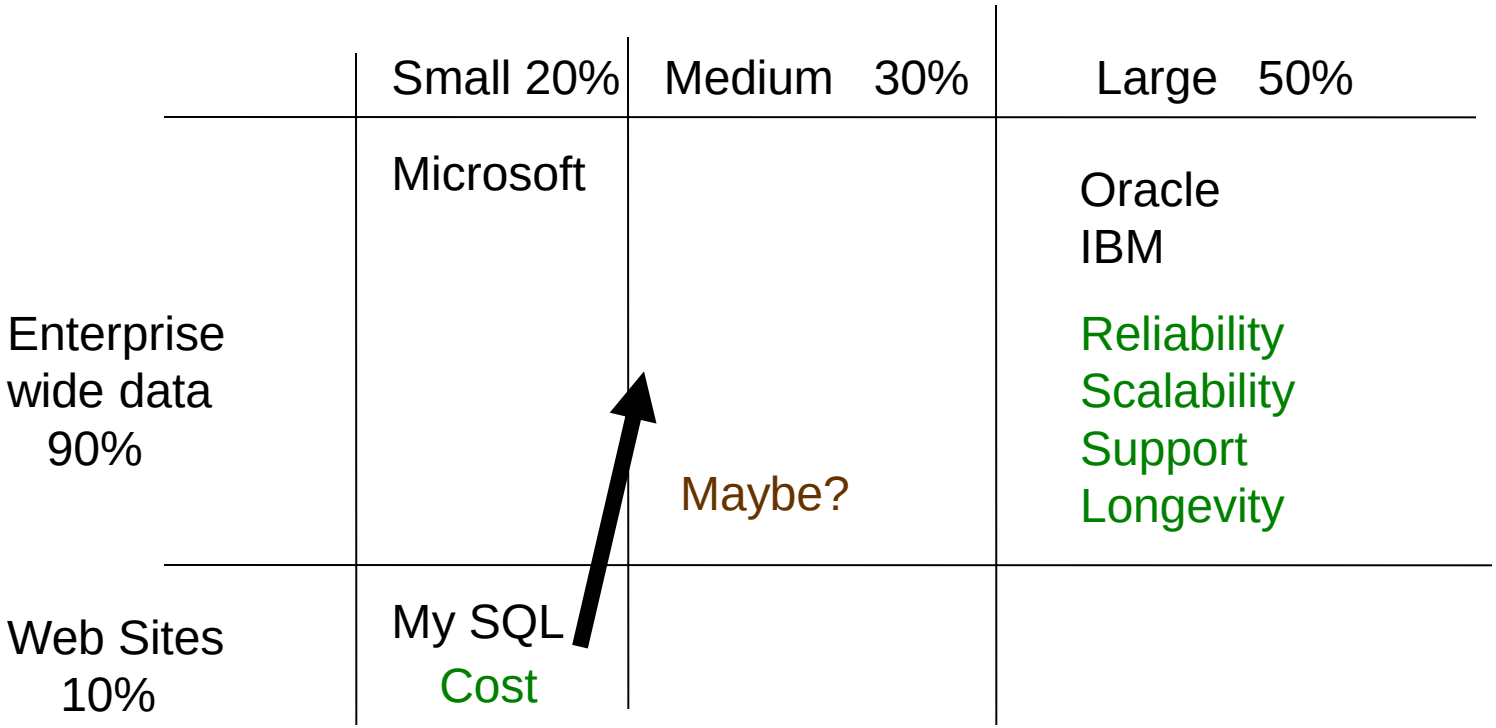
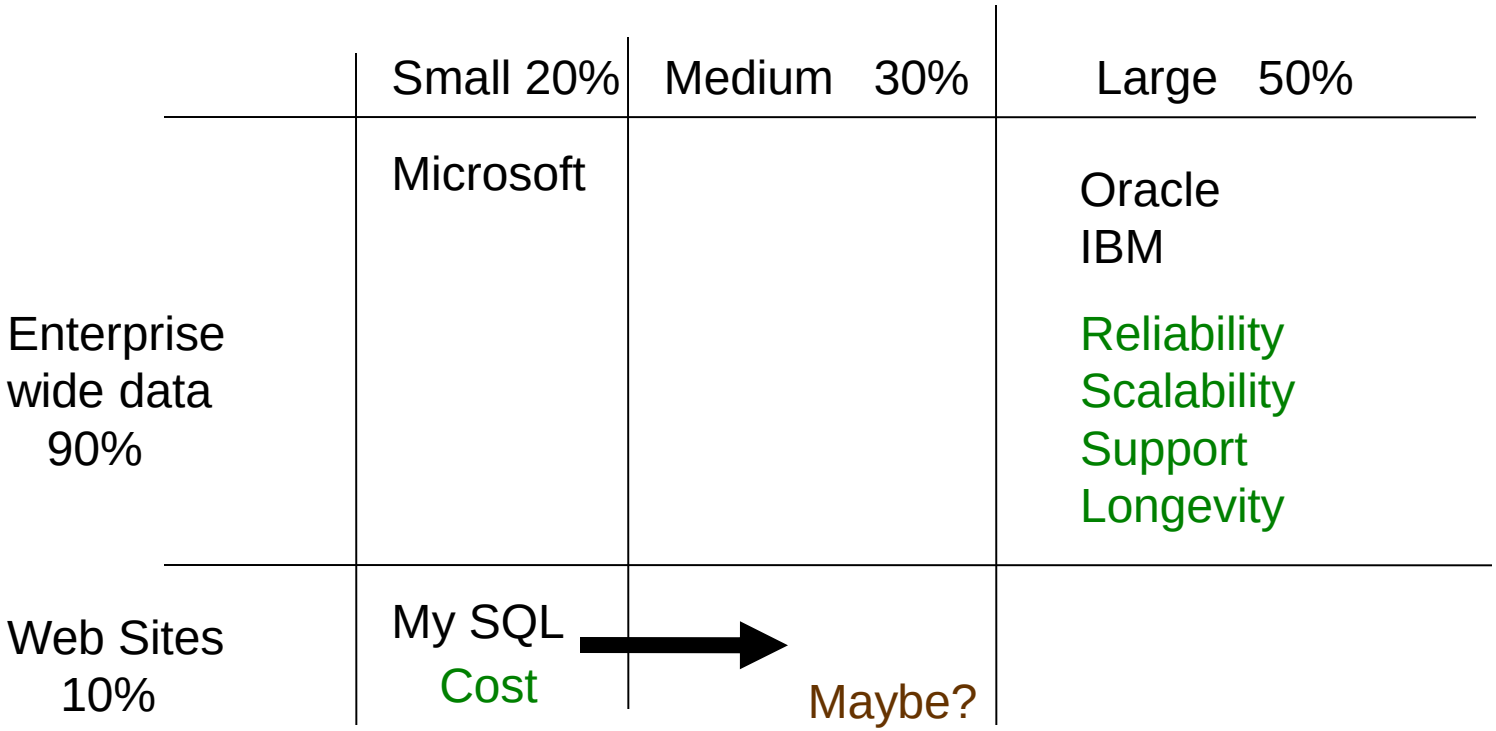


- + Many of these customers already using MySQL with websites
- + Less emphasis on global organization
- + Leverage SAP alliance
- - Up against Microsoft.

Figure Adapted from "Teaching Note for MySQL Open Source Database," 6/1/04, Stanford GSB.

My SQL: Growth Strategy



- + builds on existing brand and strengths
- - Market not so big

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