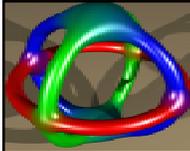


# Out with the Bathtub and in with a Shower Model

**Frederick T. Sheldon**  
**Assistant Prof. of Computer Science**  
*Washington State University*

Adapted from a talk at ISSRE 2000 by:  
Michael Prowse  
past Director of Availability and Quality  
Software Systems Group  
Sun Microsystems, Inc.



## Overview

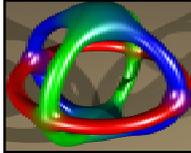
Product Adoption Life Cycle

Internet Growth Cycle Time

What leads and what Follows

Extreme Reliability

Summary



## Product Adoption Life Cycle

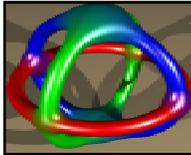
Products are accepted into mainstream applications through a well defined economic process that culls-out inferior products before they have the opportunity to cause catastrophic harm.....

---

Process worked well over the last 35 years.  
And then...

## The Service-Driven Internet





Any one

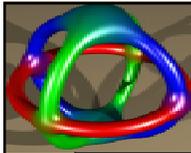
Any time

Any where

Any device

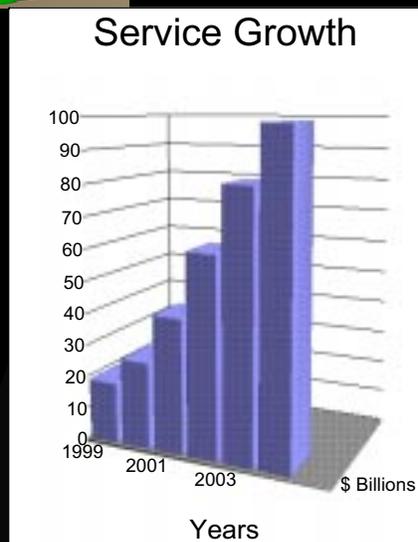
Webtone  $\geq$  Dialtone

8/96



## Internet Growth

Source: International Data Corp



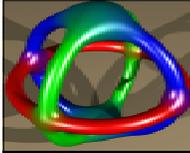
**Software is the Difference**

**Distributed dev/customers**

**Tighter Development Cycles**

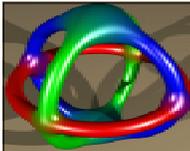
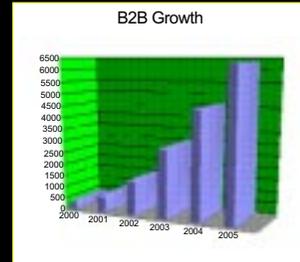
**Flexibility**

**Exit Strategy**

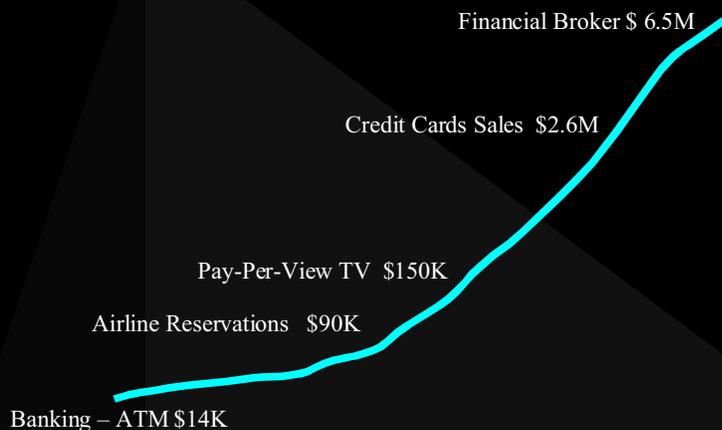


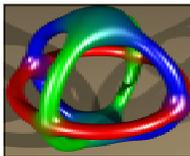
# Size and Complexity of Change

- ⊕ DarpaNet to Internet
- ⊕ Netscape
- ⊕ e-Commerce
- ⊕ B2B, B2C
- ⊕ Beanythingyoucanbe.com
- ⊕ Yahoo
- ⊕ Information Accessibility
- ⊕ Software is the common thread

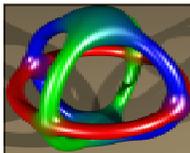
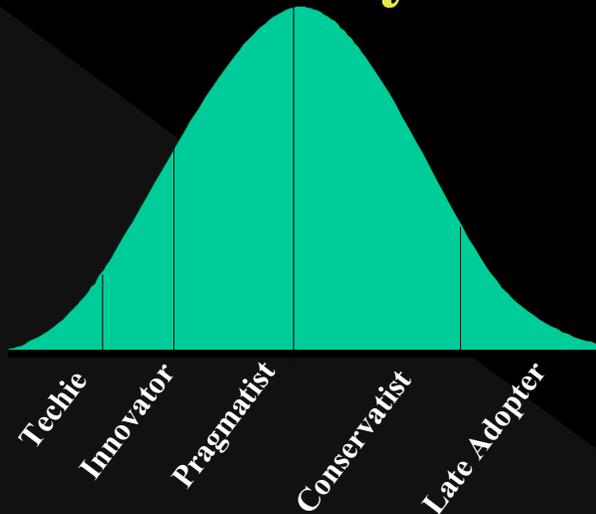


# Average Cost per Hour of Downtime





# The Product Adoption Life Cycle

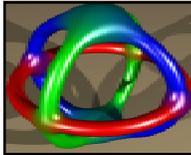


# Technology Infusion and the Pace of Change

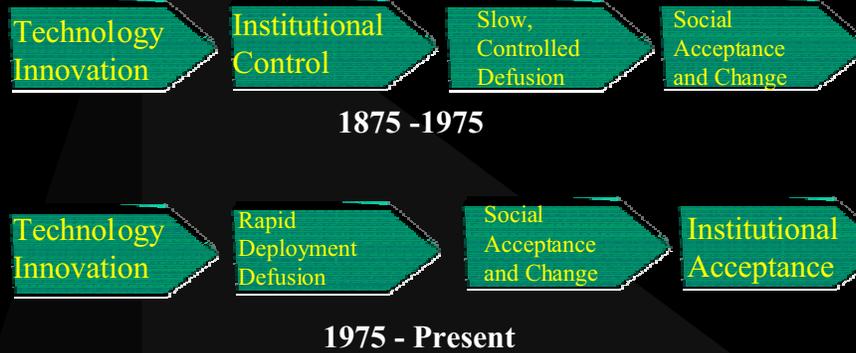


1875 -1975

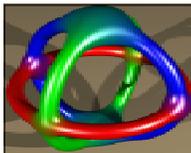
Regis McKenna: "Real Time Preparing the Customer for Change"  
Harvard Business School Press 1997



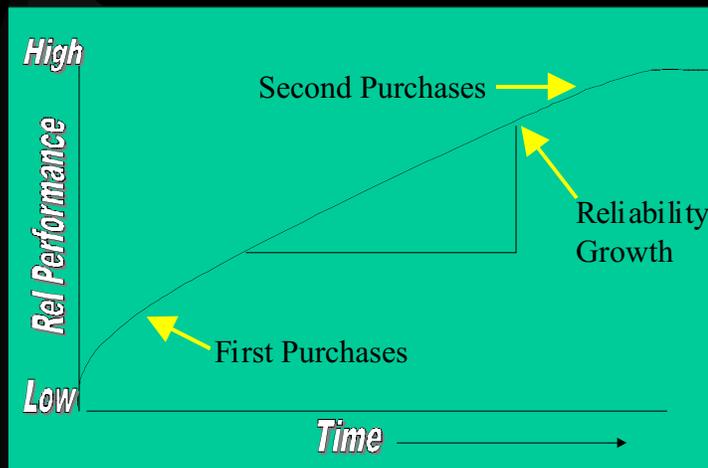
# Technology Infusion and the Pace of Change



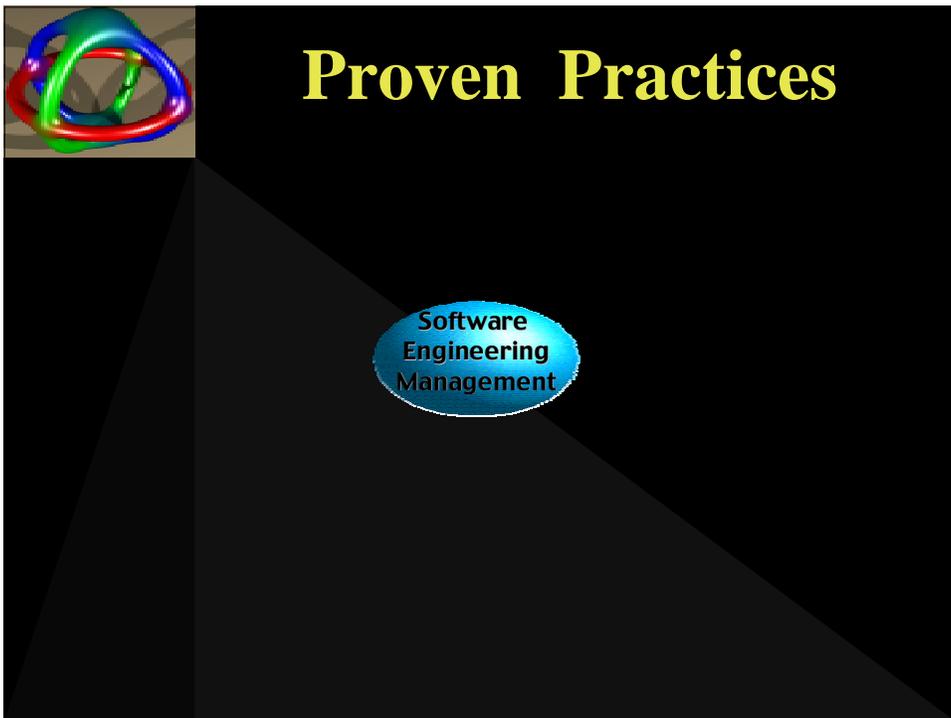
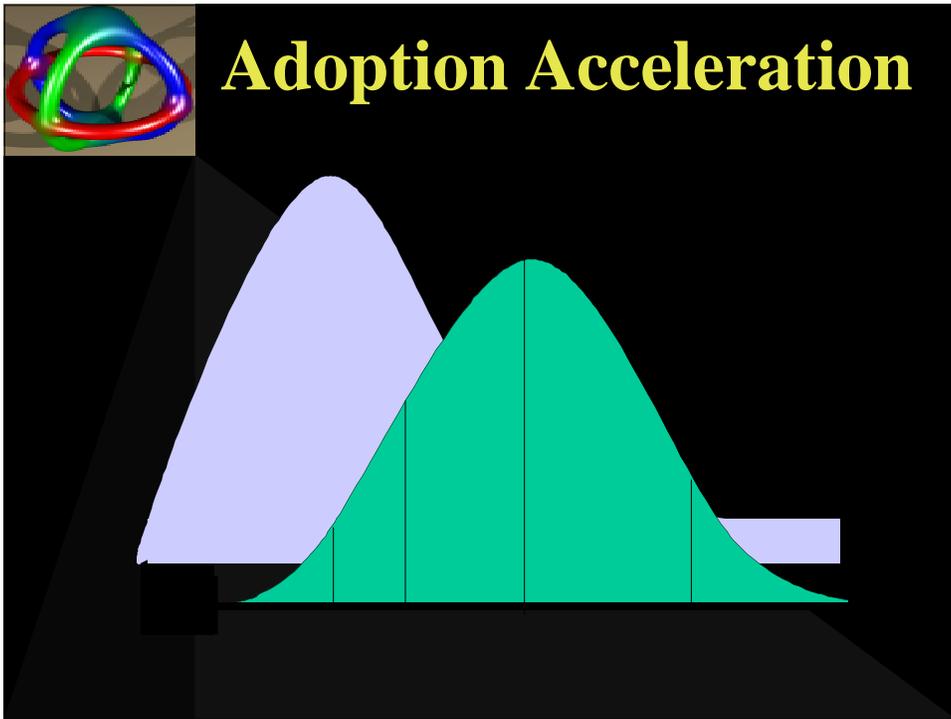
Regis McKenna: "Real Time Preparing the Customer for Change"  
Harvard Business School Press 1997

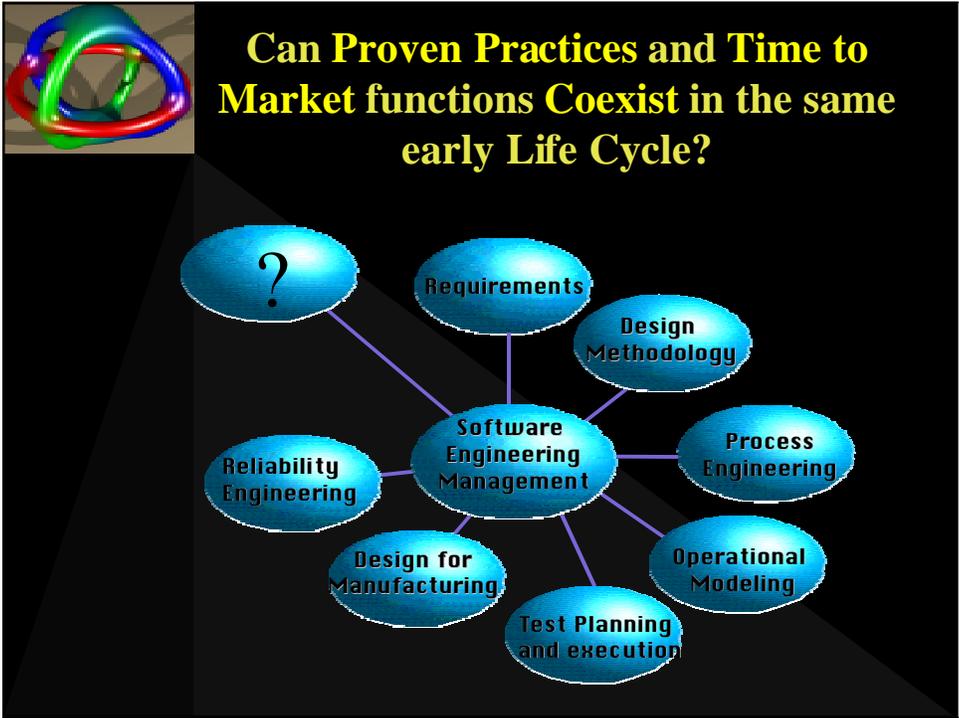


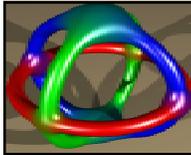
# Customer Purchase during Reliability Growth



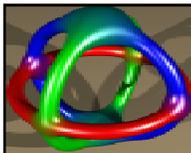
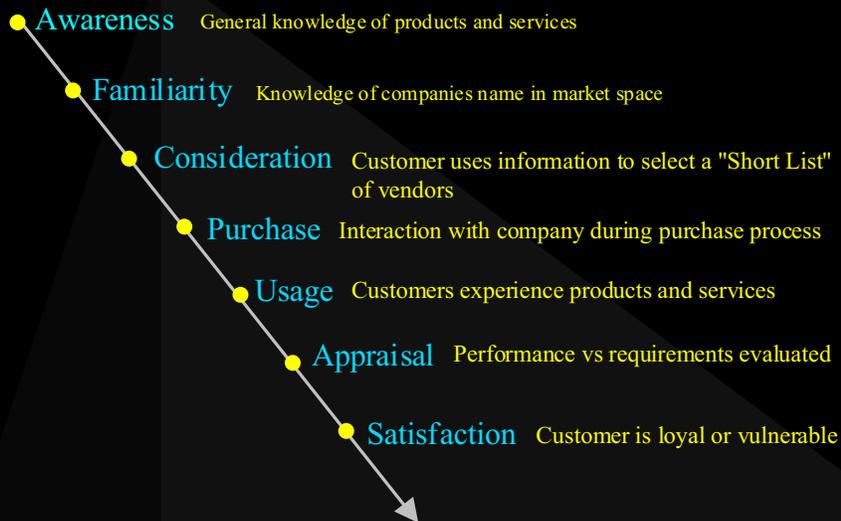
H. James Harrington "Reliability Simplified"







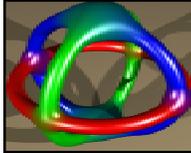
# Stages in the Customer Lifecycle



# Buyers "Short List" by Order of Importance

**Consideration** Customer Uses Information to Select a "Short List" of Vendors





## Where are the Priorities?

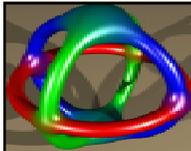
Substance follows Image

Quality follows Schedule

Reliability follows Relationship

Time to Market Leads All

What's Reliability Engineering to do?

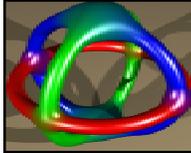


## Lead, Follow, Or Get Out of the Way

### Historical Perspective

- ⊗ 1960-70 Create SW any way possible
- ⊗ 1970-80 Rules and practices introduced
- ⊗ 1980-90 More and More of the above
  - ⊗ Bureaucracy entrenched, documented procedures, Cowboys rule again
  - ⊗ Call for simpler friendly programming – Lightweight Methodologies

Extreme Programming is Created



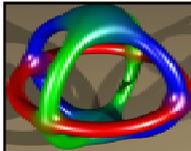
# Extreme Programming

Lightweight

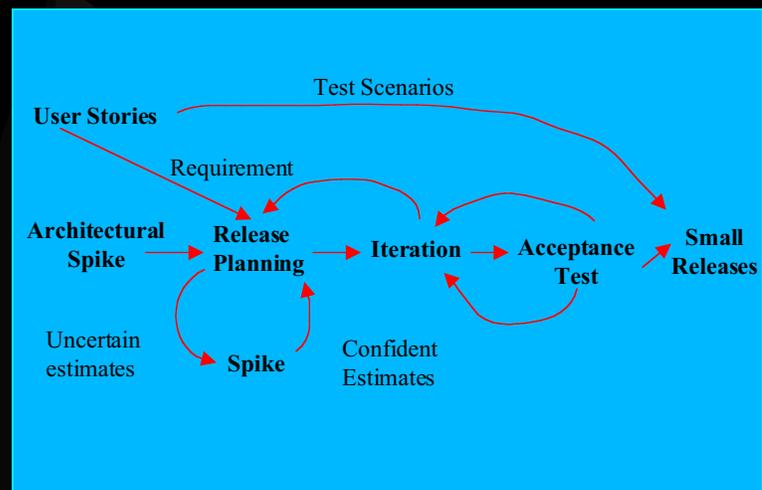
Few rules and modest number of practices

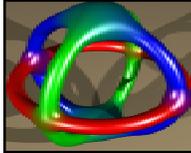
Clean and concise environment

Programmers feel free to be creative yet they are organized and focused

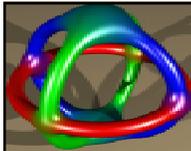
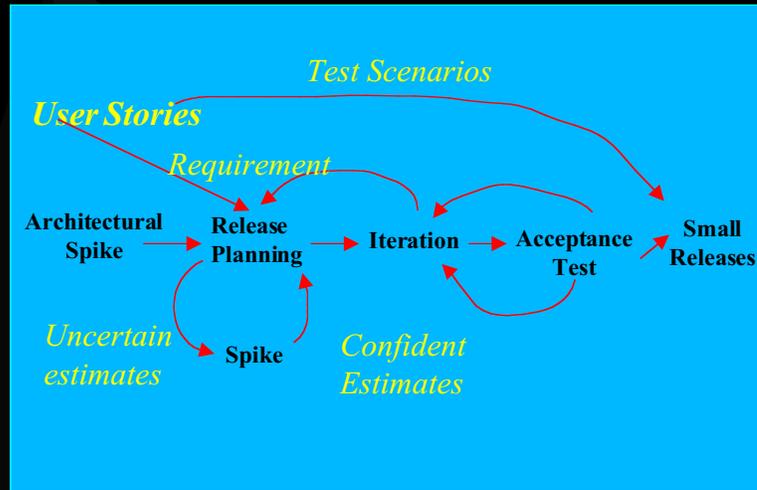


# Extreme Programming





# Extreme Programming REs Involvement



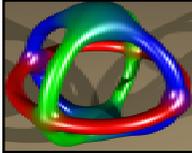
# Extreme Reliability

User Stories – Written from a **RAS** perspective

Test Scenarios – Written before coding with **RAS** measurability

Requirements – With **RAS** from a Customer's perspective

Estimates validated by **Reliability Engineering**



## Summary

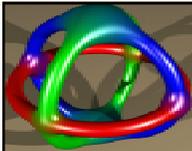
**Product Adoption** has accelerated

**Internet Growth** is without comparison

**Second Purchases** may never happen if consumers get locked in early

**Software** is the the means to rapidly move into growth markets

**Reliability Engineering** must develop new models and methodologies



## Conclusion

Weibull has its place, but we need fast snapshots that predict Reliability and Availability in the first release

For **RE** to remain relevant a Shower Model is needed that works with the dynamics of the new adoption lifecycle and Lightweight SW methodologies

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Washington State University

