



## Integrating Non-Linear Process Sets in Software Development Projects

Presented to the Dallas Chapter ASEE

Professor Paul Pond

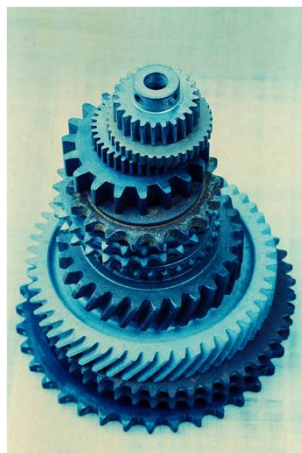
Collin College

ppond@ccc.edu



## Agenda

Tonight we will briefly consider:



- **The opportunity to improve software development projects.** We are reminded of the CHAOS study and Ed Yourdon's work.
- **Causes.** Common primary factors.
- **Process Sets.** A new awareness.
- **Nonlinearity.** Our improved understanding.
- **Integration.** A starting point.



## The Opportunity

Our Scars and Bruises



## The CHAOS Study



- 1994 – 84% of software projects fail
- 2000 – 79% of software projects fail
- 2004 – 82% of software projects fail



## Death March




- Edward Yourdon
  - “Project parameters” exceed the norm by at least 50%
    - Schedule compressed to  $< .5$  the amount of time estimated by a rational process.
    - Staff reduced to  $< .5$  the number of people that would be assigned to a project of this size and scope.
    - Budget cut in half.
    - Functionality, features, etc. = normal X 2




## Common Experience


**What is your experience?**




## Causes



Where shall we point the finger?



## CHAOS



- The Five Deadly Sins
  - Ambition/Overambition – to gain power through the impact of overreaching goals.
  - Arrogance – overbearing pride evidenced by a superior manner towards superiors, peers, and inferiors.
  - Ignorance – unaware unaware. Often with apathy.
  - Abstinence – refraining contributing to the project.
  - Fraudulence – actions intended to deceive.



## Death March -- Yourdon



- Politics, politics, politics
- Naïve promises made by marketing, senior executives, naïve project managers, etc.
- Naïve optimism of youth: “We can do it over the weekend!”
- The “start-up” mentality of fledgling, entrepreneurial companies.
- The “Marine Corp” mentality: *Real* programmers don't need sleep!



## Death March – Yourdon (cont.)

- Intense competition caused by global markets.
- Intense competition caused by the appearance of new technologies.
- Intense pressure caused by unexpected government regulations.
- Unexpected and/or unplanned crises – three best programmers died of Bubonic Plague.

## > Requirements (Scope)



The Elusive Nature of Requirements!

## > Estimates

- Guesses
- Wishes
- Hope



Hope is Not a Strategy!



## External Factors



## Process Sets

Isn't this a lot like Systems Theory?



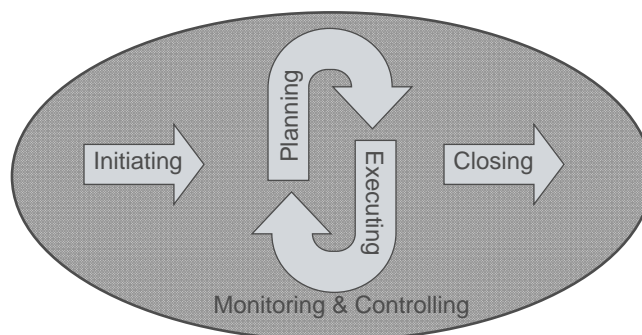
## Software Development

- Rational Unified Process (RUP)
- Agile Programming
- Extreme Programming (XP)



## Project Management

- 44 distinct process in five process groups.





## Client Business and Use

- Contract related
  - Progress
  - Payment
  - Change
- Expectations
- Context (and culture) of use
- Internal and shared processes



## Business Processes

- Internal program and portfolio processes, priorities, and constraints
- Policies, procedures, and culture.
- Financial constraints (cash flow, priorities, rates of return, weighted average cost of capital, and etc.



## Vendor/Supplier Processes

# All Supply Chain Issues



## Legal and Regulatory Processes

SOX  
HIPPA  
*'Nuff Said!*



## Nonlinearity

Our improved understanding



### Iterative and Incremental

- Most development processes recognize non-linear nature of software development.
- Few tools handle it with any grace.



## Integration

A starting point



## Situational Awareness

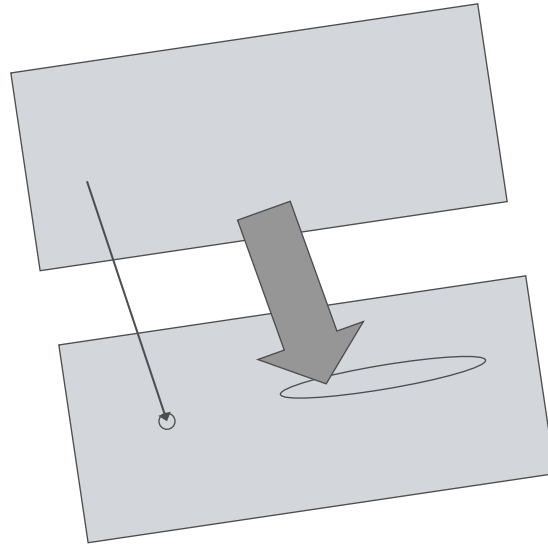
**A Fighter Pilot's Story --**  
COL John S. ...d. Fighter  
Weapons ... 638



A fighter pilot must constantly and instantaneously know the location, vector, and energy state of every aircraft in the combat air space.



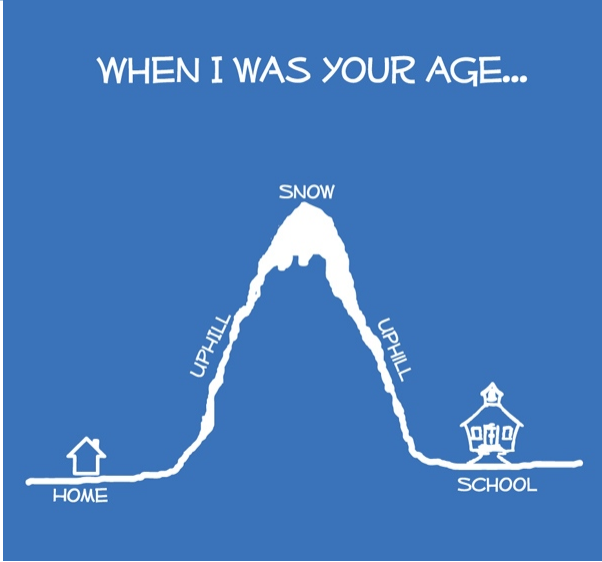
## ➤ Touch Points (or Zones)



## ➤ Use of External Dependencies

- In a PM tool such as Primavera, MS Project (Enterprise), or equivalent:
  - Locate touch points or zones
  - Code as external dependency
  - Changes in the predecessor work flow (finance, marketing, client, and etc.) will then be reflected in your project plan
  - Observe, orient, communicate & decide, take action, repeat.

**> Like the Old-Timers say . . .**

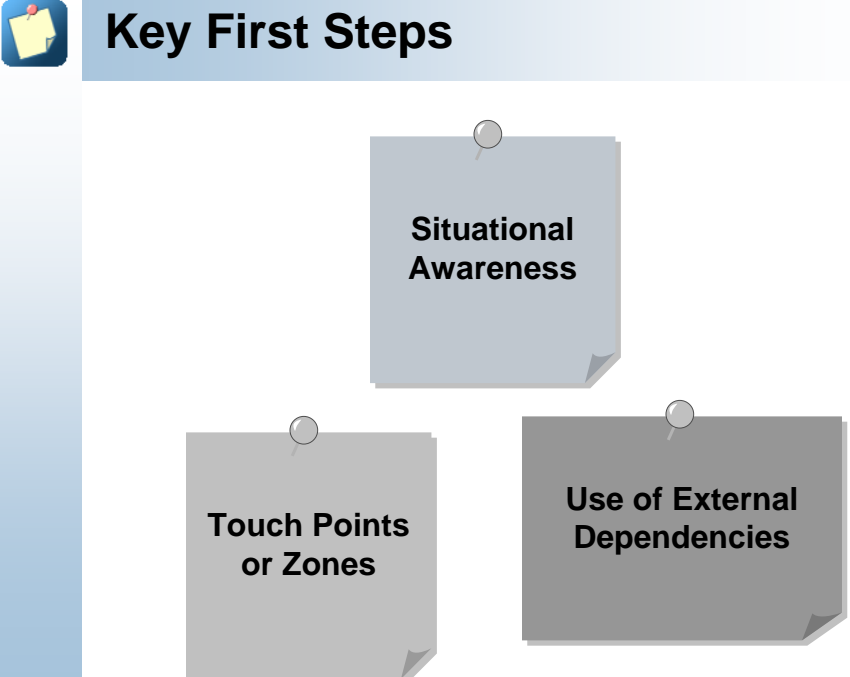


WHEN I WAS YOUR AGE...

UP-HILL SNOW UP-HILL

HOME SCHOOL

**Key First Steps**



**Situational Awareness**

**Touch Points or Zones**

**Use of External Dependencies**



## Your Questions

**Q**UESTIONS