

- Analysis of commonality/conflict in functionality/architecture
- Reuse potential
- Evolutionary
- Social dimensions
  - Individual vs team vs organizational concerns
  - Process — product — market congruence

*Implications for Process Technology*

- Generic Process
  - Parameterization, customization
  - Fragments, composition
  - Goals, motivations
  - Concurrency, distribution
  - Social considerations
  - Practical (not research) modeling technology
  - Precision of the model
  - Specialization, generalization
  - Reflexivity, dynamism
  - Orthogonalization, interaction
- Process, Product Line Relationship
  - Process Line directed processes
  - Mechanisms for Product Line (constraints) are reusable
  - Congruency of process, product, and market
  - Duality of process and product
  - Specialize to the domain

*Process Technology Leverage*

- Rearrangement
  - Right time in the process (possibly just in time)
- Eliminate
  - Consider customer, business and no value
  - Simplify
  - Optimize
- Automate (that is, support enactment)
  - Agenda manager
  - Workflow manager
  - Animator
  - Help, guidance
  - Step/Activity automation
  - Change propagation
  - Cooperation and Coordination

*The utility of these comes from specialization.*

## Session 8: Product Line Implications for Process — Summary

Dewayne E. Perry  
Systems and Software Research Center  
Bell Laboratories  
Murray Hill NJ 07974

In this summary of product line implications for processes, I outline the major discussions and delineate their salient and relevant points. The summary presented below follows the viewgraphs presented in this session. The viewgraphs used in the summary are entitled:

- Techniques and Methods for Product Lines
- Product Line Aspects
- Generic Software Architecture
- Process Implications
- Implications for Process Technology
- Process Technology Leverage

### *Techniques and Methods for Product Lines*

- Domain Analysis
- Software Architecture
- Platforms
- Generation
- Asset Reuse
- Customization
- Reverse Engineering/Rearchitecting
- Process Reuse
- Process Federation and Cooperation
- SW Configuration Management

### *Product Line Aspects*

- Problem/Solution Space origin
- Shared assets
- System requirements - Business activity
- Similarity in some important aspect
- The result of narrowing, specialization
- Hyperweb of consistency constraints
- Trade-off decisions/strategic analyses
- Experience base
- Better, faster, cheaper

### *Generic Software Architecture*

- Product line architectural drivers

- User requirements
- Domain constraints
- Business requirements
- Project constraints

- Instance  $\rightsquigarrow$  Type
- Harder  $\rightsquigarrow$  need better methods
- Good engineering even more critical
- Evolution is critical
  - Projection into the future
  - Instances  $\rightsquigarrow$  Type  $\rightsquigarrow$  Evolution

### *Process Implications*

- Generation
  - Prototype oriented: specification  $\rightsquigarrow$  compile
  - Normal case first, then add special cases
  - Visual feedback useful
  - Tools for composition and analysis
- Asset generation ( $\rightsquigarrow$  Product Line)
  - Asset base investment
  - Asset evolution
  - Asset base management
  - Asset use
- Asset Re-engineering (Products  $\rightsquigarrow$  Product Line)
  - Asset discovery
  - Asset synthesis and evolution
  - Continuous re-engineering
- Variability Management
- Change Management
  - Activity boundaries
  - Disjoint teams
  - Tool encapsulations
  - Isolation of workspaces
  - Multiple ‘streams’
  - product + processes
- Business domain
  - Domain analysis and bounding