

Product Lines and Software Architecture

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Director

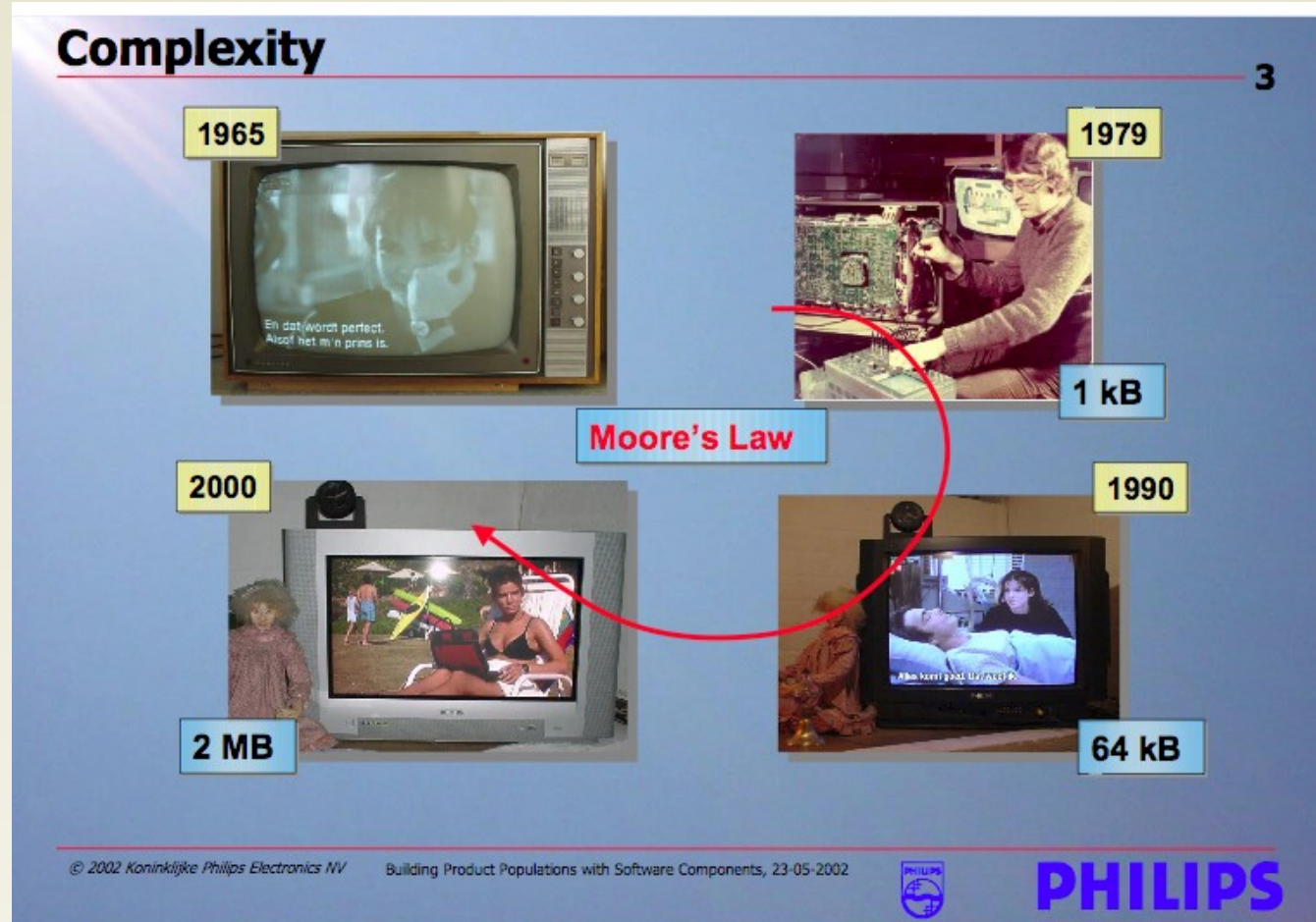
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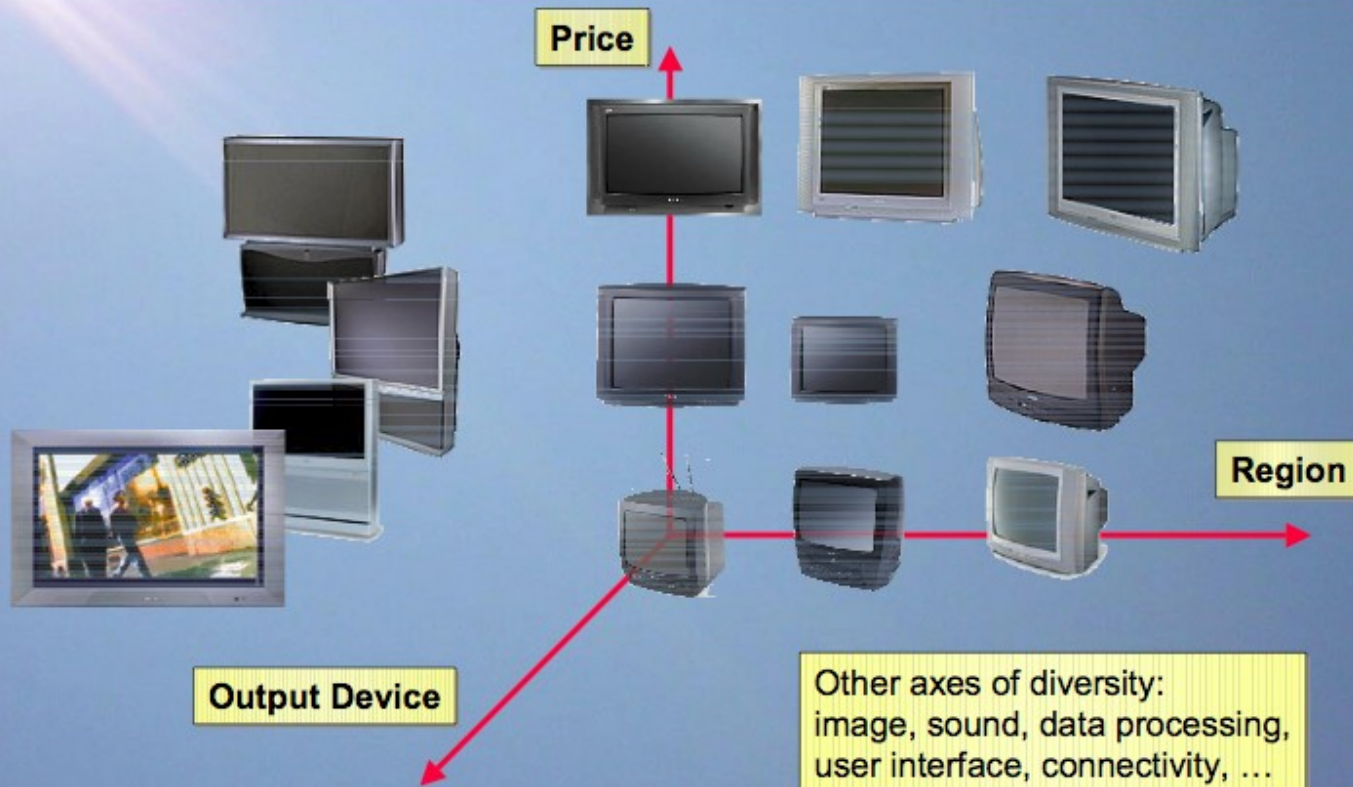
Growing Sophistication of Consumer Devices



Families of Related Products

A Television Product Family

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The Necessity and Benefit of Product Lines

- Building each of these TVs from scratch would likely put Philips out of business
- Reusing structure, behaviors, and component implementations is increasingly important to successful business practice
 - ✦ It simplifies the software development task
 - ✦ It reduces the development time and cost
 - ✦ it improves the overall system reliability
- Recognizing and exploiting commonality and variability across products

Reuse as the Big Win

- Architecture: reuse of
 - ✦ Ideas
 - ✦ Knowledge
 - ✦ Patterns
 - ✦ Engineering guidance
 - ✦ Well-worn experience
- Product families: reuse of
 - ✦ Structure
 - ✦ Behaviors
 - ✦ Implementations
 - ✦ Test suites...

Added Benefit – Product Populations

Convergence

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TV + VCR = TVCR



TV + DVD = TV-DVD



TV + HD = Tivo



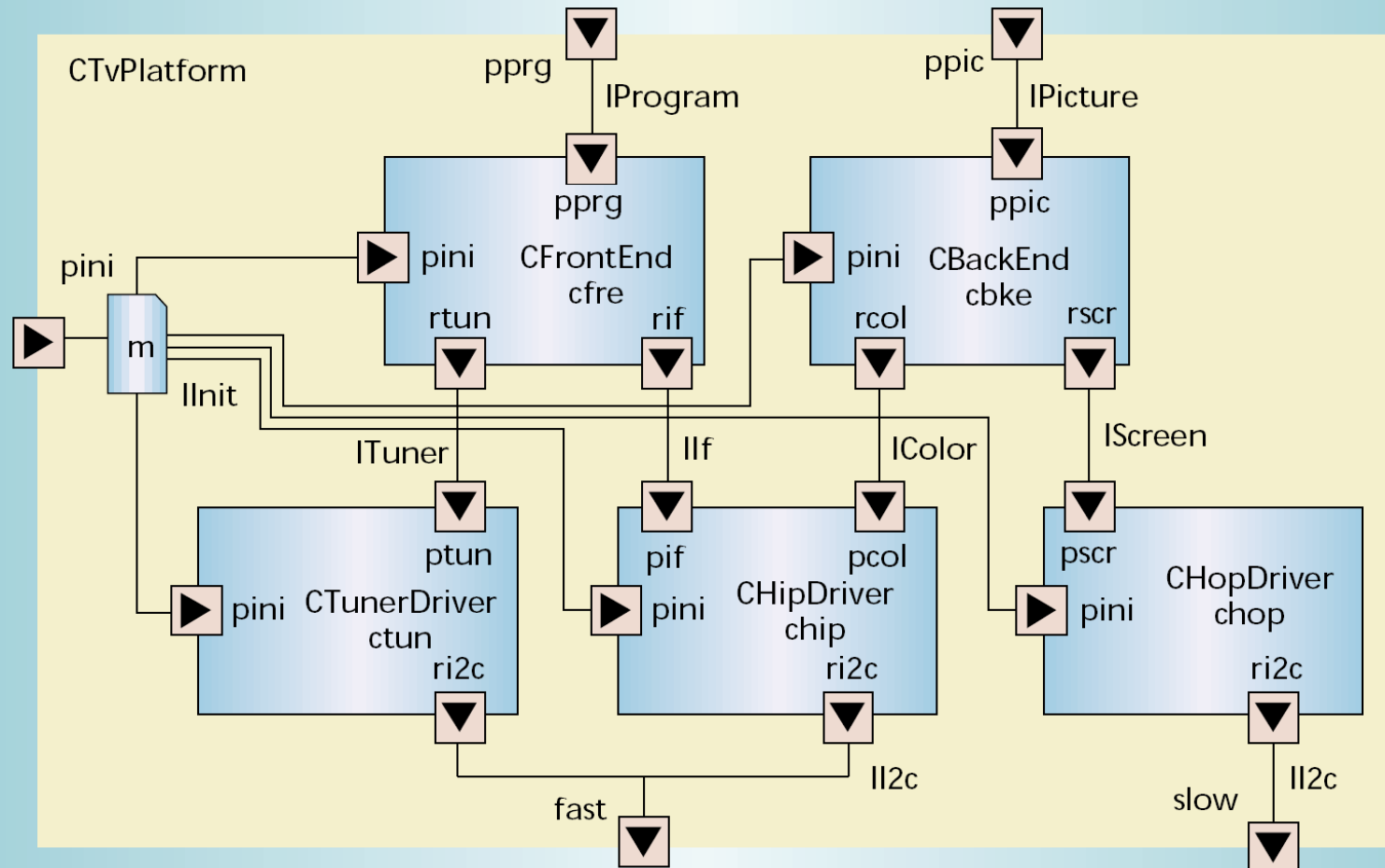
TV + STB = Digital TV



TV + Audio = Home Theater

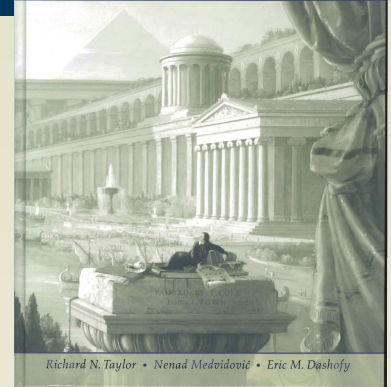


The Centerpiece – Architecture



Product Line Application Areas

- Consumer electronics
- Automotive electronics
- Medical devices
- Games
- Telephones (cellular and desktop)



Software Architecture

- Software architecture is there:
 - ✦ To help you understand the consequences of your decisions
 - ✦ To enable you to focus your time productively
 - ✦ To enable reuse that pays off in market-dominating product lines
 - With a TECHNICAL basis
 - ✦ With notations, tools, analytical techniques that put muscle to the ideas
- <http://www.softwarearchitecturebook.com/>

Korea Connections...

- Taylor is scheduled to lecture on software architecture at:
 - Samsung (in Korea)
 - Korean Software Engineering Society
- March 2012