From Requirements to Specs

• Structured exploration of variations in classes of requirements
• Keeping multiple forms of description consistent (stylized-English, automata)
• Simulation-driven requirements exploration
  – Extraction of models from “final” simulation configuration
• Dependencies among requirements are essential
  – As requirements are elicited dependencies must be captured
  – Making explicit the invariants assumed by domain experts
End-to-End Development

• Distinguish between methods and “tools”
  – Methods shape the design flow by defining sequencing, choice and iteration among steps
  – “tools” are used at points in the design flow to make decisions, to transform descriptions

• Rather than think about embedded-system wide solution think about product-lines
  – Captures commonality among products (e.g., infusion pumps)
  – Identifies variability among products
  – Makes it easier for domain experts and engineers to interact since the product-line introduces common vocabulary, assumptions, …
  – Method/tool support can be customized for product-line (e.g., Cadena) with advantages for scalability of analyses, etc.
Documentation

• Documentation needs to be thought of as a complex of textual descriptions, models, simulations, …
  – It evolves as artifacts are developed
  – It can be checked for properties, e.g., for internal consistency, …
  – It can be queried, e.g., for traceability, …