

## Vizsgakérdések (2016. tavasz)

Mit jelentenek az alábbi fogalmak? (Nem a formális definíciók visszaadását kérem, hanem a fogalmak lényegét és értelmezését pl. a házi feladat kontextusában)

- 1) Systems Engineering
  - a) Systems engineering vs. software engineering
  - b) Key concepts of component based design (Components, Ports, Interface, Connectors)
  - c) HW/SW allocation, Platform model
  - d) Traceability
  - e) Design models vs. verification models
  - f) Design-time vs. run-time models
  - g) High-level systems engineering design flow (e.g. automotive)
- 2) Domain-specific languages, metamodeling, EMF
  - a) Metamodel vs instance model
  - b) Concrete syntax vs. abstract syntax
  - c) Textual vs. graphical syntax and editors
  - d) Well-formedness constraints
  - e) Derived features and Views
  - f) Static vs. dynamic modeling languages
  - g) Operational vs. denotational semantics (dynamic)
  - h) Behavior modeling languages: State based vs. dataflow based
  - i) Compiled vs. interpreted models (e.g. architecture of EMF vs. Sirius)
  - j) Core concepts in Ecore metamodels (EClass, EReference, EAttribute)
  - k) Multiplicities and containment hierarchy in EMF models and metamodels
  - l) High-level model management services in EMF (auto-generated)
- 3) Model queries, transformation and code generation
  - a) Ad hoc / dedicated vs. templated based code generators
  - b) Lexer vs. parser, AST vs. DOM
  - c) Grammar vs. derivation vs derivation tree
  - d) Model / graph queries (concept, language elements, semantics)
  - e) Local search vs. incremental graph query evaluation
  - f) Graph transformation rules (structure + core semantics)
  - g) Graph transformation rules (semantic variations)
  - h) Causal dependence vs. conflicts in graph transformation:
  - i) Model transformations (M2T and M2M) vs Model transformation chains
  - j) Incremental model transformations (forward vs. backward vs change-driven)
  - k) Levels of incrementality in model transformations
  - l) Reactive transformations
- 4) Advanced modeling topics
  - a) Standard model serialization in XMI (e.g. in EMF)
  - b) Model comparison vs model differencing vs model merge
  - c) Evolution: Model vs. metamodel vs. transformation
  - d) Refactoring, Reverse engineering
  - e) Megamodels, global model management
  - f) Back-annotation, Traceability of transformations
  - g) Design space exploration
  - h) Offline vs. online collaborative modeling