Abstract Components for Process Modelling using Information Systems

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Agenda

UNIVERSITAS OSTRAVIENSIS

1. Current state, problems (standards, tools)
2. Our solution
   - Process Modelling Tool (PMT)
   - Process Wizard (PW)
   - Process Reengineering Methodology
3. Benefits and further work

Current state

- prof. Scheer – IS with process models (ARIS tool + SAP)
- prof. Aalst – developed standalone tools for process automation using Workflow Net formalism
- prof. Vondrák – developed standalone tool based on Petri nets

- Pros and cons:
  - Use of formal methods (CPN, WF nets, …)
  - Standalone applications, needed external systems and integrations

Process tools and notations

Other tools:

- IS with build-in process models, WfMS
- SOA + BPEL, BRE (Rule-based systems)
- PAIS architecture (Process Aware Information System)

Used standards (BPMN, UML, IDEF, EPC, …)

- Different focus, quality -> hard to compare
- Specific for particular SW vendor
- If several vendors agreed on standard – too complex

- Not agreed elements in 10years of existence (WfMC)
- Not used proved, well formed and defined formalism (FSM, PTN, …)

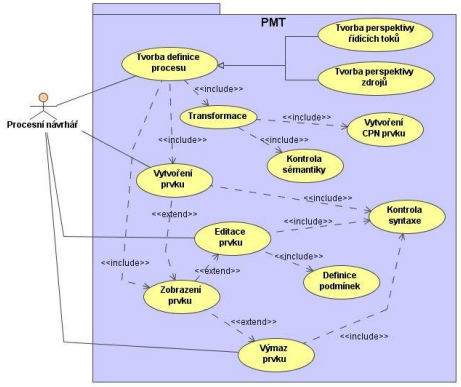
Solution

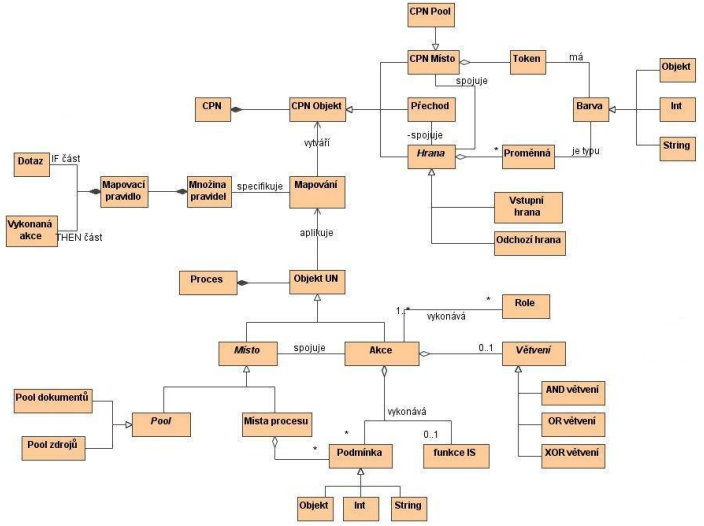
- Designed
  - Abstract process modelling tool (PMT)
  - Abstract process wizard (PW) + principles of generation
- Defined process reengineering methodology (principles, roles, activities, artefacts, life-cycle, component realisation + integration)

- Not implemented code, group of features, requirements
- IS driven by explicit process model, possible generation of IS functions based on XML
- CPN formalism on background
- Part of real implementation in QI IS (DC Concept)

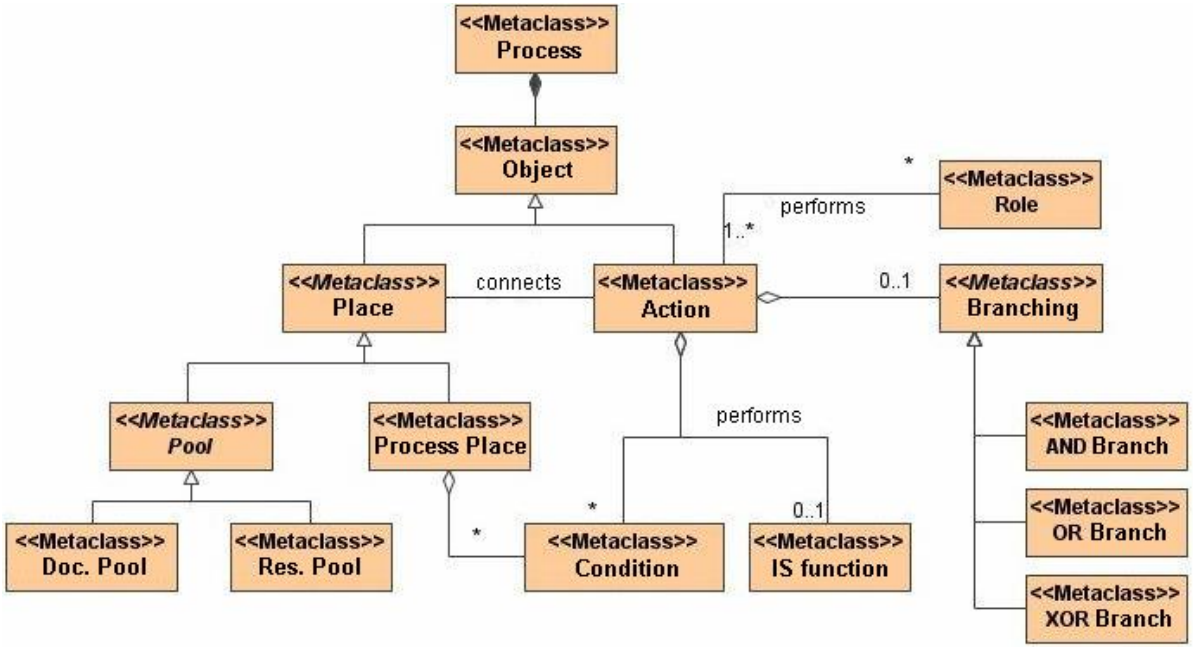
Process modelling tool (PMT)

- Definition of business process models, mapping this perspective onto CPN
- Executable process model (thanks to IS functions generation) – no extra documentation
- Cheaper maintenance, eliminating waste (update of functions and related docs)
- Possibility to use Fuzzy Petri nets for vague process modelling





PMT – User notation



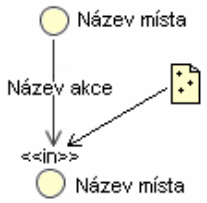
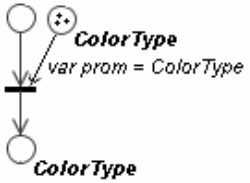
PMT mapping

- User notation (UN)

  $UN = (MP, A, TO, F, V_A, V_O, S_A, S_O, TM, PF, Name)$

- Formal definition of mapping

- Visual mapping between UN and CPN

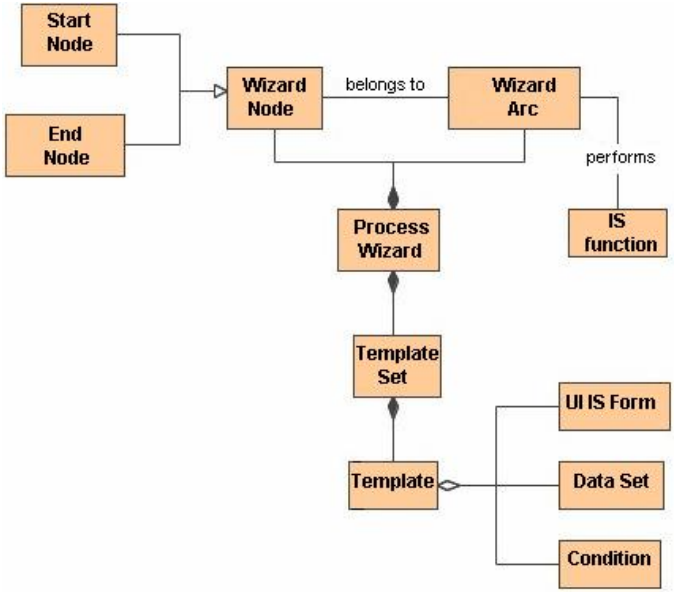
Význam	Prvek Uživatelské notace	Mapování na CPN
Vstupní podmínka – např. potřeba konkr. dokumentu (využití poolu dokumentů v kombinaci s akcí a místy procesu)		 Přechod podmíněn potřebou určitého počtu tokenů konkrétní barvy z poolu. Např.: 1`(Obj, „expedováno“)

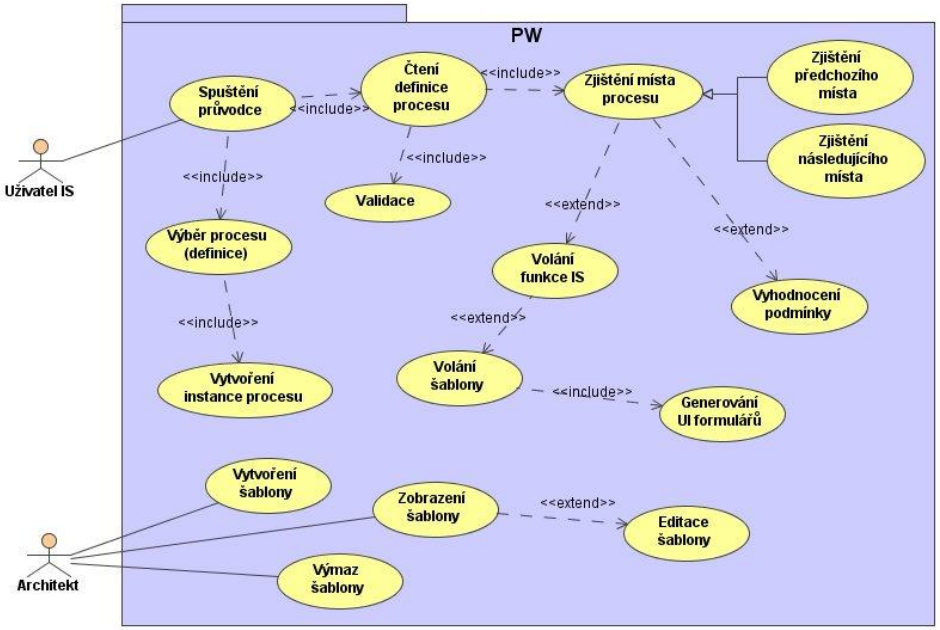
Process Wizard (PW)

This abstract component defines following:

- Data composes one transaction
- All steps done in sequence from beginning to the end
- One starting state, several in between, one final step
- Validation of the step before moving forward
- Several ways how to achieve the final state
- Possibility to go back

PW – structure, functions





Why methodology?

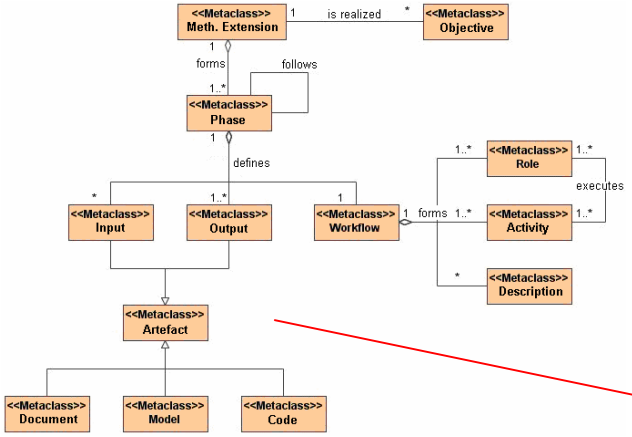
1. Problem solution – technology or redesigned process – the reason for methodology
2. Designed abstract solution (PMT, PW) needs to be implemented in particular IS – how to do this says methodology

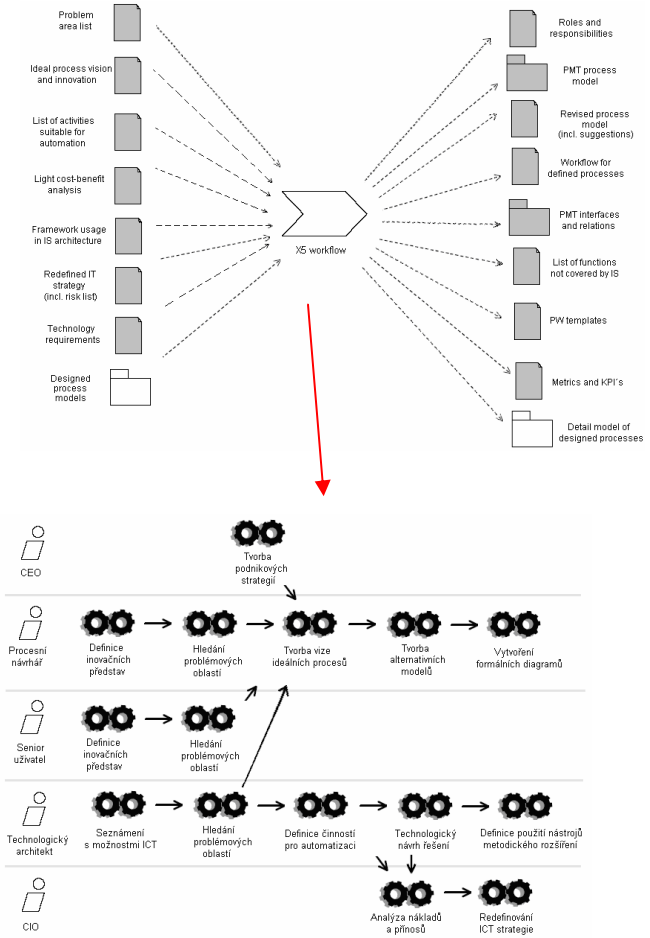
Based on ProSci methodology – 4 phases redesigned/added

Methodology defines:

- Principles (IT linked with business, cost savings, better product quality)
- Techniques (CASE study, vision, cost analysis, templates)
- Tools (PMT, PW)
- Phases, roles, activities, artefacts

Methodology





Benefits & further work

- Designed abstract modelling tool PMT for explicit business process model definition, use of IS, based on CPN formalism
  - Basis for vague business process modelling based on fuzzy Petri nets variants (fuzzy CPN, …)
- Designed abstract process wizard PW
- Defined business process reengineering methodology
- IS with explicit process model – cost savings (integration, data transformation, licences), easier maintenance
- Vague process modelling, knowledge base and data representation