Update on OWL-S Process Model for Release 1.1

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Changes in Process Model

• Compliance with OWL-DL
• ‘bundled’ results include effects and outputs (knowledge effects) associated with a particular result condition
• Data flow model used to relate input, output parameters of different steps in composite processes
• Conditions (pre, result) are SWRL+DRS expressions included as XMLLiterals
Details

- Input, Output, Local parameters now subclass swrl:variable
  - parameterType property (range XMLLiteral)
  - parameterValue – literal representing constant or expression in terms of other parameters (useful in composite processes)

- Process
  - hasParticipant
  - hasPrecondition <swrl expression as XMLLiteral>
  - hasResult
    - Result
      - inCondition <parameterized swrl expression as XMLLiteral>
      - hasEffect <parameterized swrl expression>
      - withOutput – parameterized OWL description representing semantics of response in terms of process parameters, precondition and result variables
OWL-S Surface Syntax

**define atomic process** BuyBook (Client - Agent Title - String Author - String
Ccno - String CcExp - MoYr) ;; input parameters

    -> (BuyOutput) ;; output parameters

**local** (?book - Book ?cc - CreditCard) ;; defines local parameters


**result when** (?bal - Number ?price - Number ?transID - Number) ;; result variables

    (and (instock ?book) (ccBalance ?cc ?bal)


**output** BuyOutput = (ConfirmedSale :to ?Client :of ?book
       :cost ?price :confirmation ?transID); ; output form

**result when** (not (instock ?book))

  **output** BuyOutput = (NotInStock ?book)

**result when** (exists ... (not (> ?price ?bal)))

  **output** BuyOutput = (InsufficientFunds ?Ccno) ;; exception result conditions

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Composite Processes

• **Perform** construct used to describe a composite process reference to another process
  – *process* property refers to performed Process
  – Describe source of inputs (parameters of other Performs in the same composite process)
    • *hasBinding* (a Binding)
    • references to Parameter of the Process to be “set”, OWL expression in terms of dataflow links to other related Performs.
    • Uses same control constructs as OWL-S 1.0
define composite process S4tP()
{
    intake:: receive(openSession());
    initiate:: create_session_key();
        send(dest <= intake.sender,
            msg <= initia.key);
    first_finishes
    {
        parallel
        {
            { receive(book_ticket(initiate.key, D3));
                ---book the airline---;
                send(dest <= intake.sender,
                    msg <= confirm_status(initiate.key, ...))
            } ||
            { receive(book_event(initiate.key, D2));
                ---book the event described by D2---;
                send(dest <= intake.sender,
                    msg <= confirm_status(initiate.key, ...))
            } ||
            { receive(book_hotel(initiate.key, D1));
                ---book the hotel---;
                send(dest <= intake.sender,
                    msg <= confirm_status(initiate.key, ...))
            } ||
            receive(terminate(initiate.key))
        }
    }
}