On Combining Linked Justification

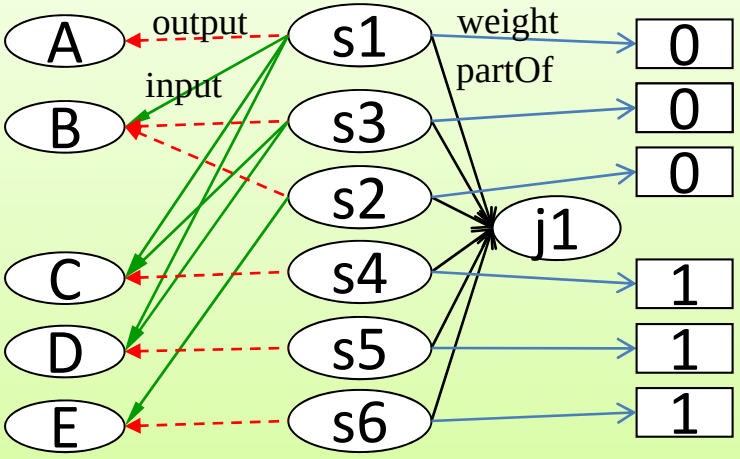
Text/Graph Notation

Text notation

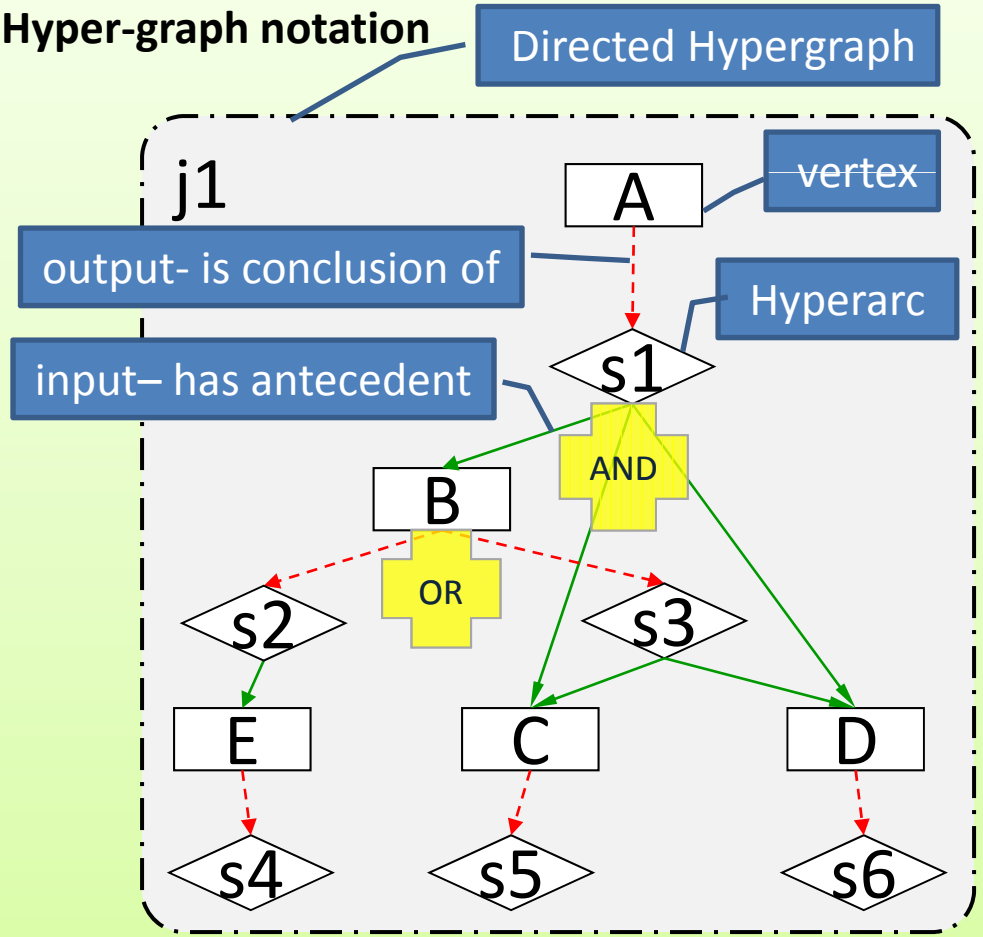
Syntax: (hyperarc-id, head-list, tail-list, source-list, weight)

(s1, {A}, {B,C,D}, {j1}, 0)
(s2, {B}, {E,C}, {j1}, 0)
(s3, {B}, {C,D}, {j1}, 0)
(s4, {E}, {}, {j1}, 1)
(s5, {C}, {}, {j1}, 1)
(s6, {D}, {}, {j1}, 1)

RDF graph notation



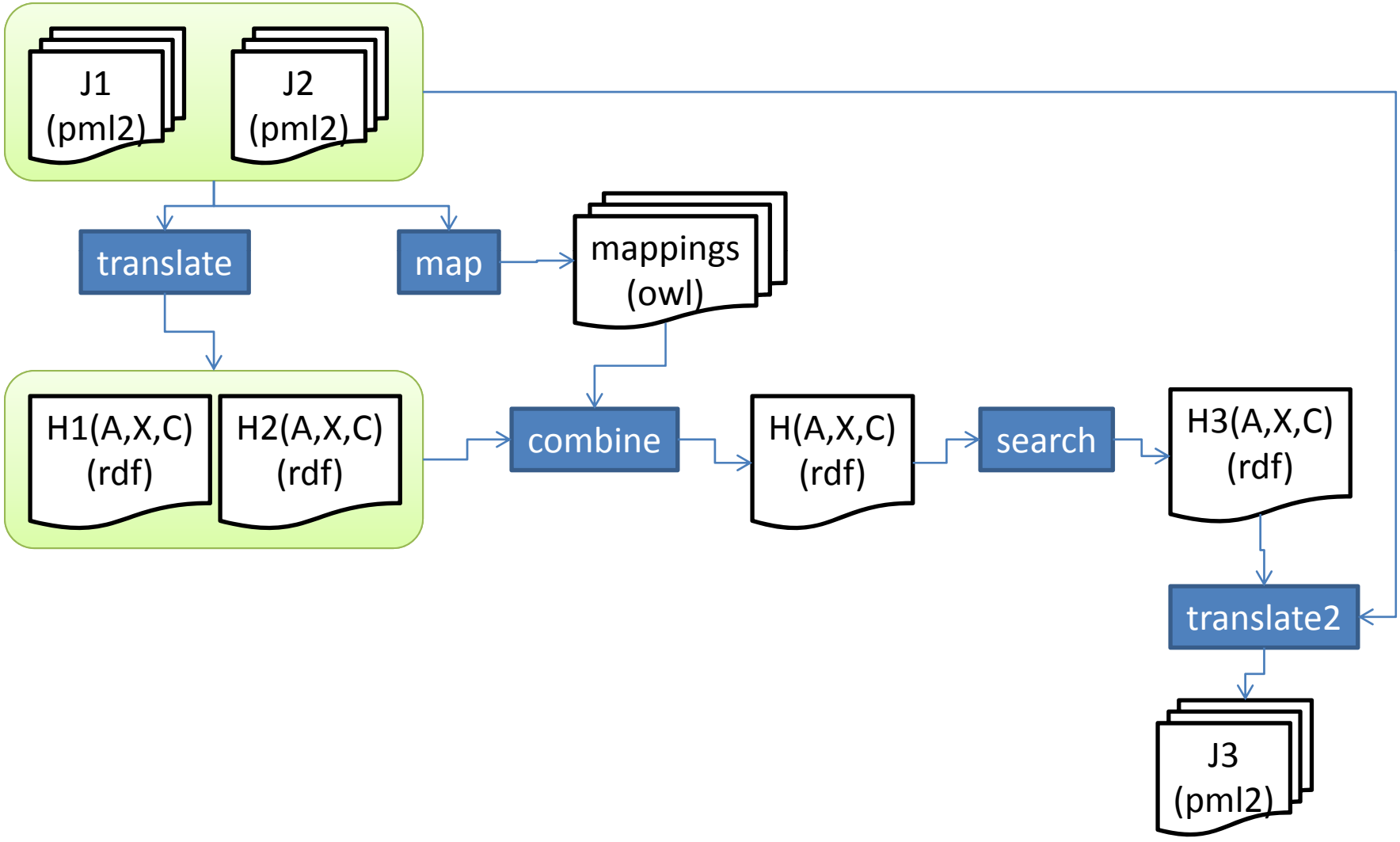
Hyper-graph notation



Directed HyperGraph Formalism

- A proof can be mapped to a semantically annotated directed hypergraph H(V, A, C):
  - V={v1,v2…vn}, vertex – formula in proof
  - A={a1,a2,…am}, hyperarc – inference step in proof
  - C: context, including source, weight, and etc.
  - Links and semantics
    - Vertex
      - In(vi) \in A, incoming hyperarcs, AND?
      - Out(vi) \in A , outgoing hyperarcs, OR
    - Hyperarc
      - output(ai) \in V, incoming vertices - formula derived as conclusions, OR?
      - input(ai) \in V, outgoing vertices - formula used as antecedents, AND
- More
  - Head(H)= U head(ai), all vertics used as head
  - Tail (H) = U tail(ai), all vertics used as tail
  - Roots(H) = Head(H) – Tail(H), all vertics can be considered as roots

Combine/Search Workflow



Combine & Search