

University of Pisa

MSc in Computer Engineering

# Systems for Strategic Management and Support

## LECTURE 8

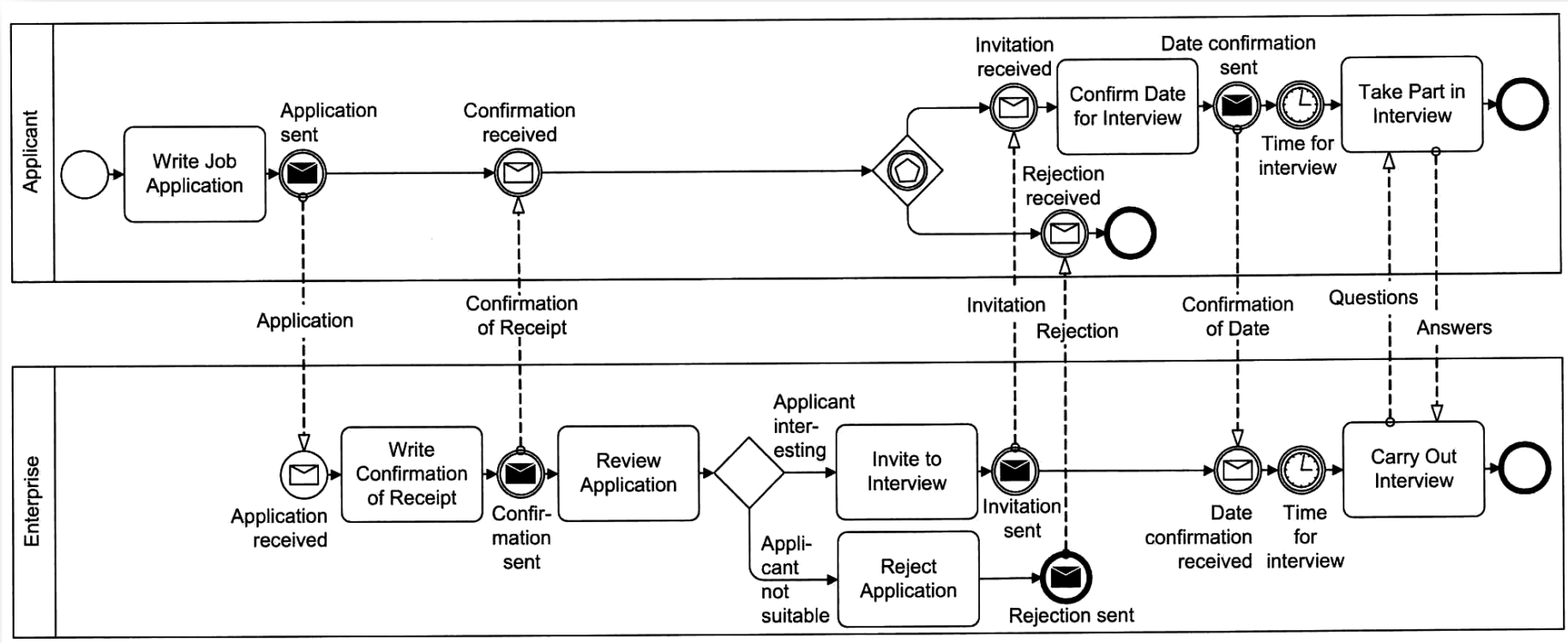
<http://www.iet.unipi.it/m.cimino/pdis/>

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## Job Application

- ❑ Describe in semi-formal natural language the following event-driven interaction between a job applicant and an enterprise.
- ❑ Given 100 starting tokens, determine the number of ending tokens for each scenario (path), considering the following branching proportions at each gateway: applicant interesting (10%).



## Semi-formal notation

1. An Applicant begins (to search for a job)
2. The Applicant writes a job application
3. The application has been sent by the App to the Enterprise  
(The Applicant waits for receiving a confirmation of receipt)
4. The application has been received by the Enterprise from the Applicant
5. The Enterprise writes the confirmation of receipt
6. The confirmation of receipt has been sent by the Enterprise to the Applicant
7. The confirmation of receipt has been received by the Applicant from the Enterprise  
(The Applicant waits for receiving either an invitation or a rejection)
8. The Enterprise reviews the application
- 9.1. If the Applicant is not suitable:
  - 9.1.1. The Enterprise rejects the application
  - 9.1.2. A message of rejection has been sent by the Enterprise to the Applicant
  - 9.1.3. The Enterprise ends.
  - 9.1.3. The rejection message of the Enterprise has been received by the Applicant
  - 9.1.4. The Applicant ends.
- 9.2. If the Applicant is interesting:
  - 9.2.1. The Enterprise Invites the Applicant to interview
  - 9.2.2. The invitation to interview has been sent by the Enterprise to the Applicant  
(The Enterprise waits for a confirmation of date)

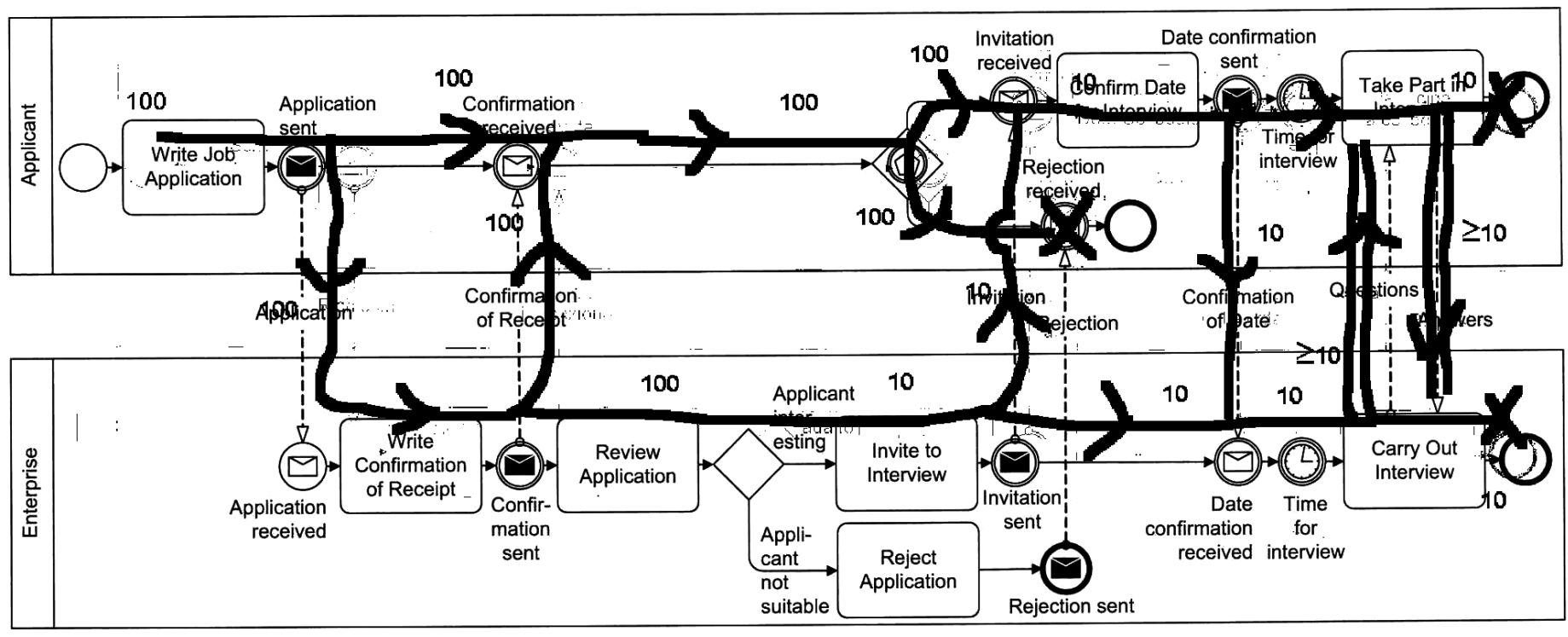
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## Semi-formal notation

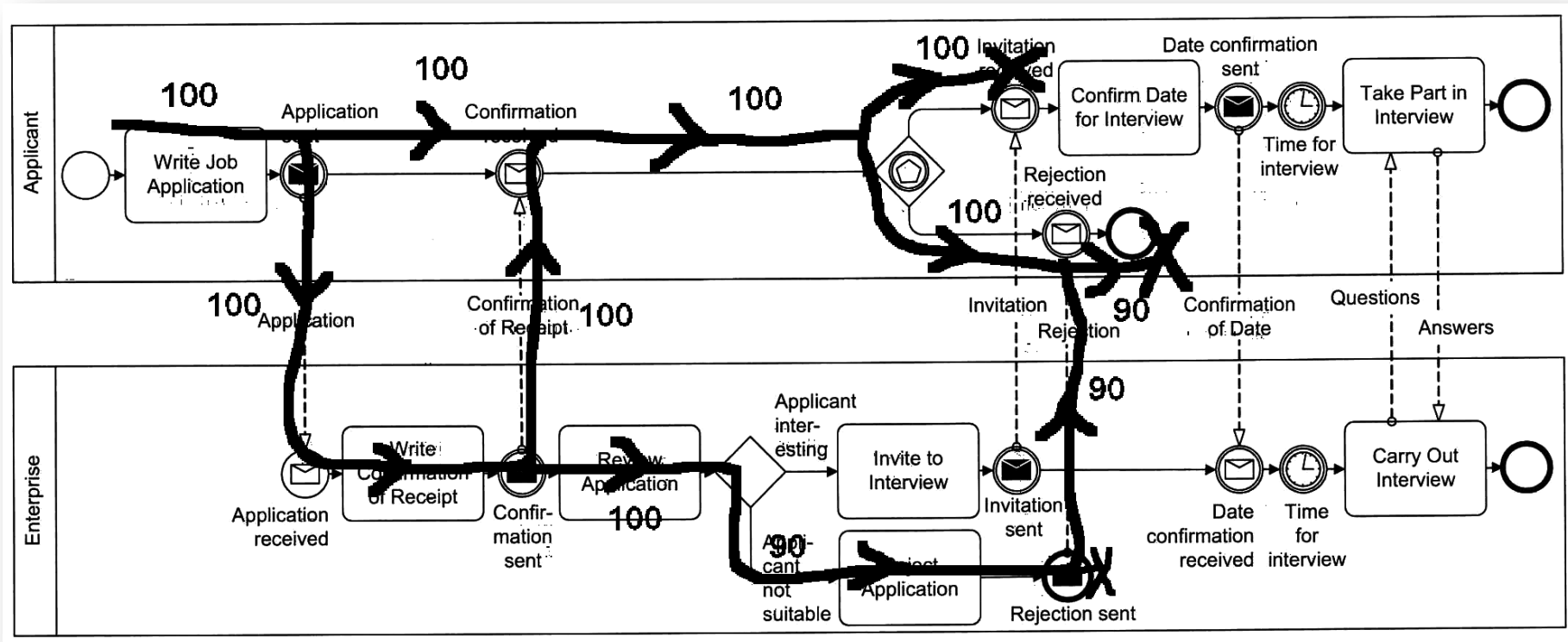
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- 9.2.3. The invitation to interview has been received by the Applicant from the Enterprise
- 9.2.4. The Applicant confirms the date for interview
- 9.2.5. The confirmation of date has been sent to the Enterprise by the Applicant
- 9.2.6. The confirmation of date has been received by the Enterprise from the Applicant
- 9.2.7. Time needed for starting the interview has elapsed
- 9.2.8. The Applicant takes part in interview, receiving questions and providing answers.  
The Enterprise carries out the interview, asking questions and receiving answers.
- 9.2.9. The Process is finished for the Applicant.  
The Process is finished for the Enterprise.

S1) INTERESTING:  $100 \times 0.1 = 10$ .

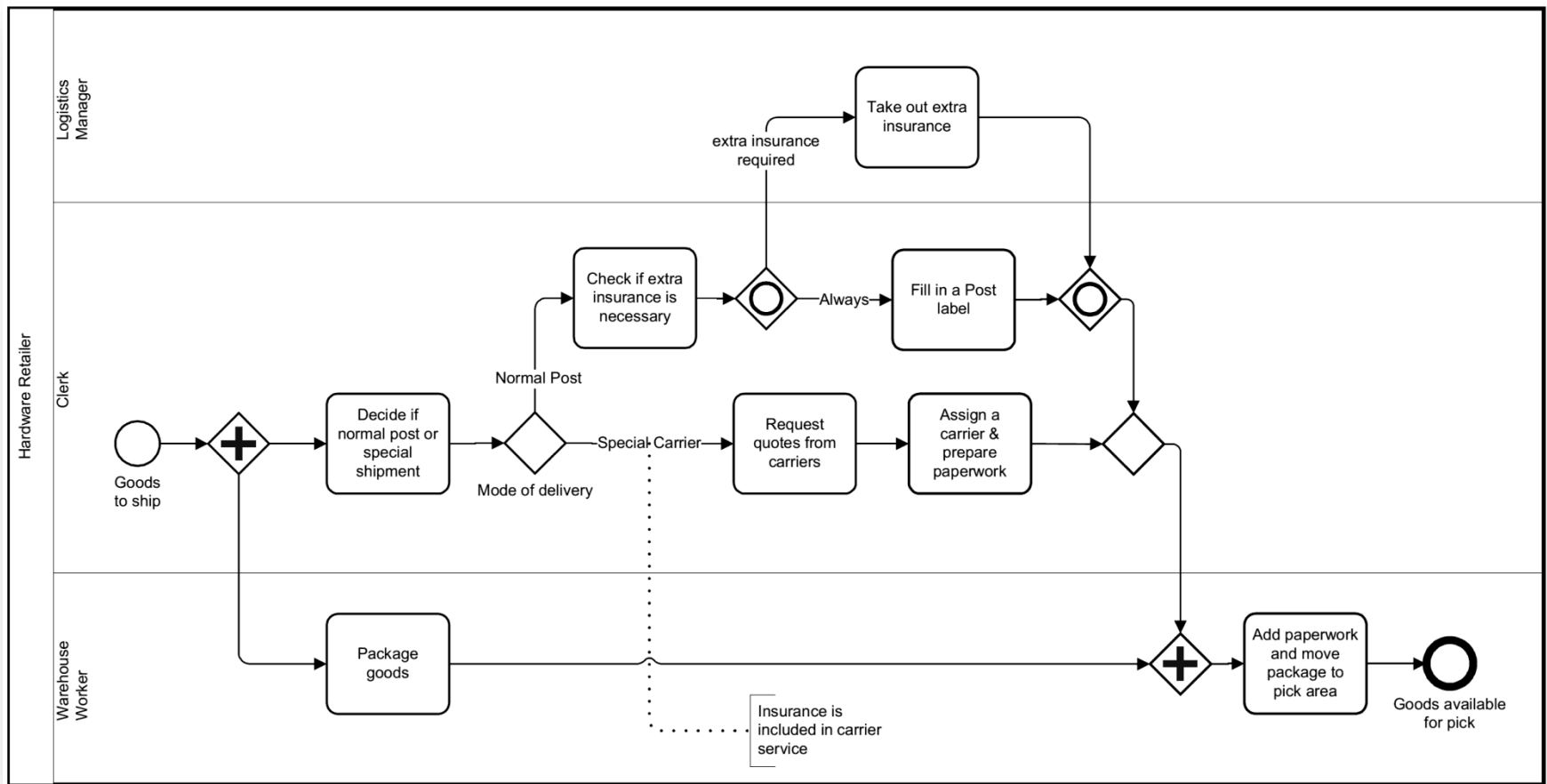


S2) NON INTERESTING:  $100 \times 0.9 = 90$ .



## Shipment Process of a Hardware Retailer

- ❑ Describe in semi-formal natural language the following shipment process, modeling the preparing steps a hardware retailer has to fulfill before the ordered goods can actually be shipped to the customer.
- ❑ Given 100 starting tokens, determine the number of ending tokens for each scenario (path), considering the following branching proportions at each gateway: normal post (90%), extra insurance required(10%).



## Semi-formal notation

1. The Clerk has good to ship

2.a The Clerk decides if normal or special shipment

2.a.1 If normal post:

2.a.1.1 The Clerk checks if extra insurance is necessary

2.a.1.2.a The Clerk fills in a post label → 2.a.2

2.a.1.2.b If extra insurance is required

2.a.1.2.b.1 The Logistics Manager takes out extra insurance

2.a.1.3 The Clerk waits for the end of the ongoing activities in 2.a.1.2.a and 2.a.1.2.b

2.a.2 If special carrier (insurance is included):

2.a.2.1 The Clerk requests quotes to carriers

2.a.2.2 The Clerk assigns carrier and prepare paperwork

2.b The Warehouse worker packages goods

3 The Warehouse worker waits for the end of 2.a e 2.b

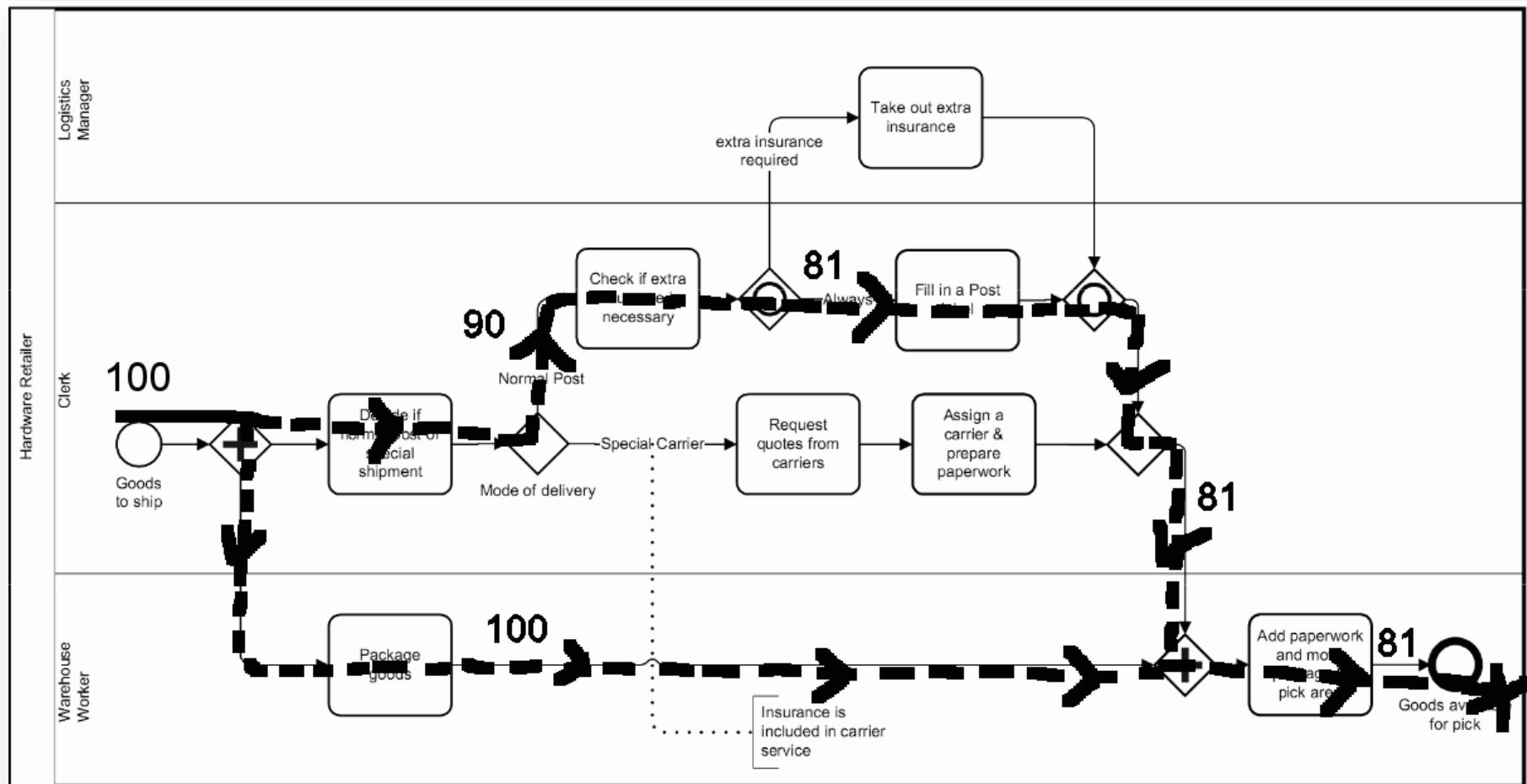
4 The Warehouse worker adds paperwork and move package to pick area

5 Goods are available for pick (End of the process).



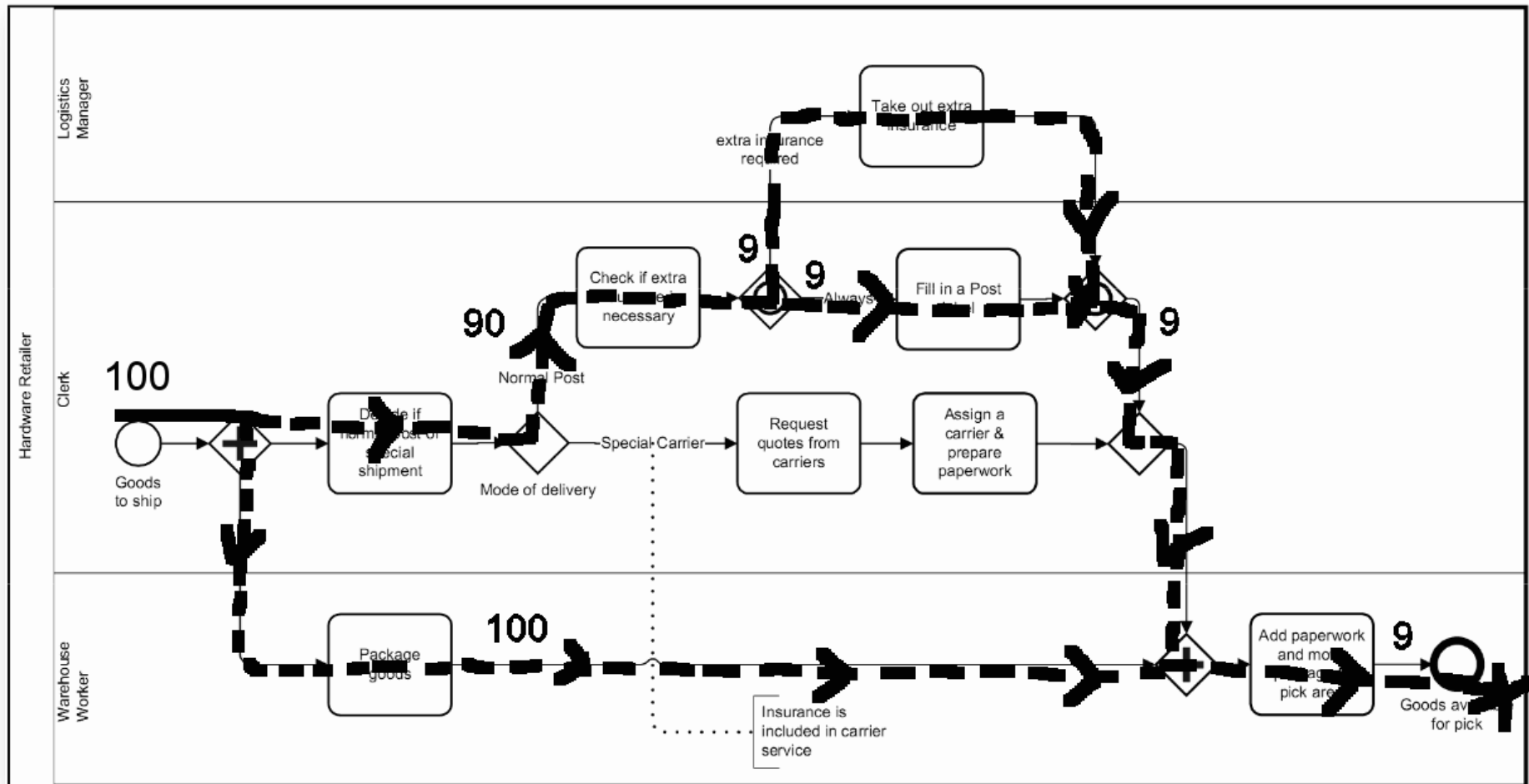
S1) NORMAL POST & NO INSURANCE:  $100 \times 0.9 \text{ \& } 90 \times 0.9 = 81$  (19 w).

- 19 “single twins” tokens (i.e., packages without labels) are still blocked at the warehouse, each waiting for their respective twin token (label).
- Only 81 process instances can end (package + label).



S2) NORMAL POST & INSURANCE:  $100 \times 0.9 \& 90 \times 0.1 = 9$  (10 w).

- 9 of the 19 waiting single-twin tokens (packages) join the new 9 single-twins tokens (new labels), and then 9 process instances end.
- 10 single-twin tokens still wait.



S3) SPECIAL CARRIER:  $100 \times 0.1 = 10$ .

- 10 of the 10 waiting single-twin tokens (packages) join the new 10 single-twins tokens (new labels), and then 10 process instances end.
- There are no other tokens waiting in the Pool.  $S1 + S2 + S3 = 81 + 9 + 10 = 100$

