

Stochastic Optimization for Dynamic Mission Replanning

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Abstract

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1. Introduction

2. Related Work

3. Stochastic Optimization

4. Modeling Approach

4.0.1. Scenarios

Exogenizing disruptions.

4.0.2. Multistage Stochastic Optimization

4.0.3. Future Blind Approach

4.0.4. Prescient Approach

5. Cost Benefit Analysis

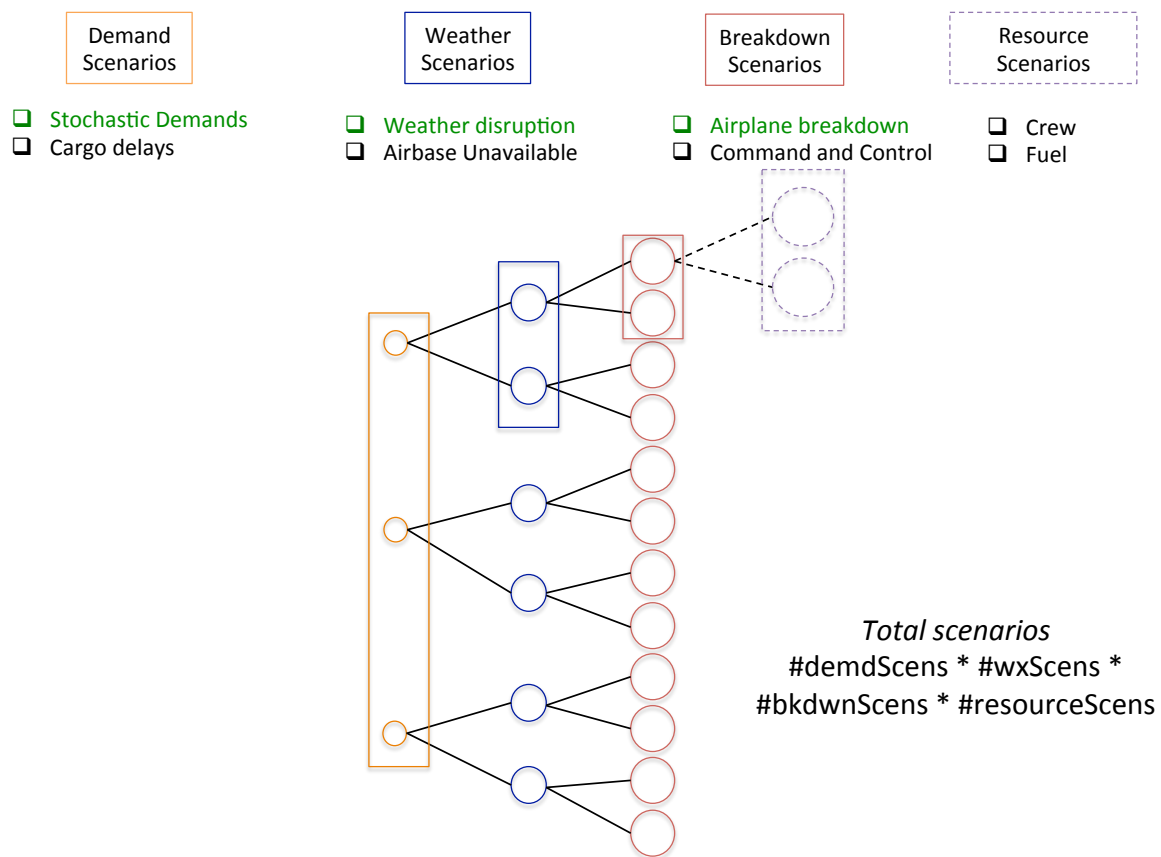
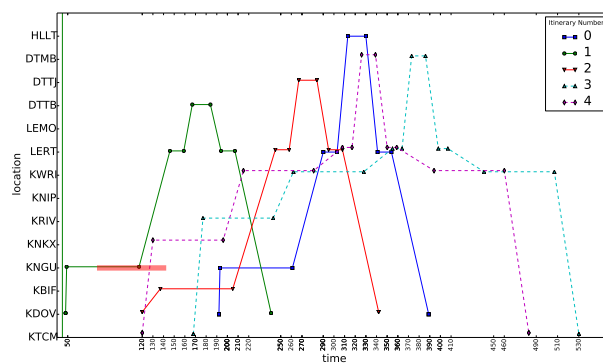
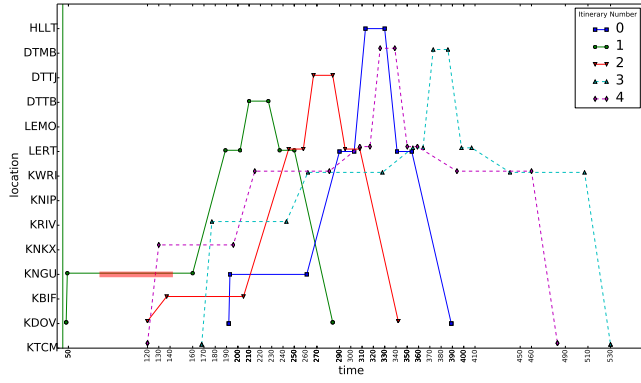


Figure 1

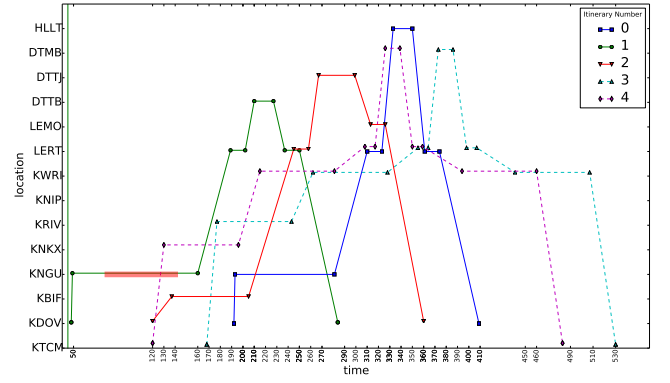


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Figure 2: Given Execution Schedule

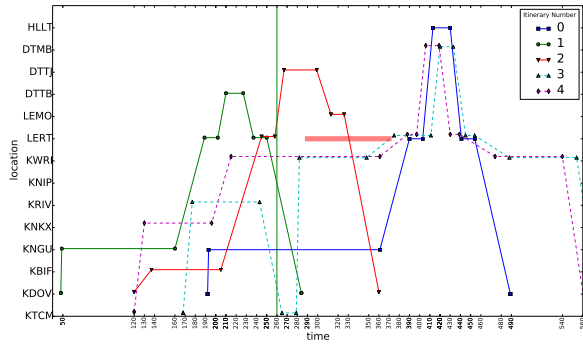


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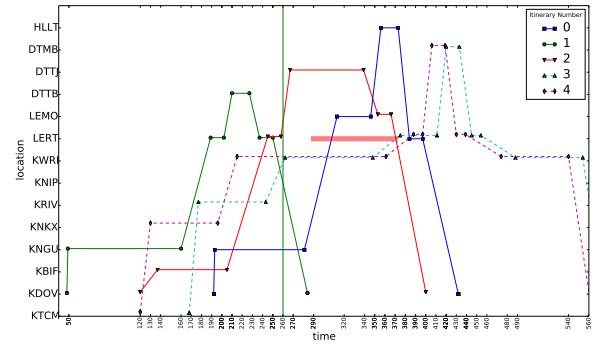


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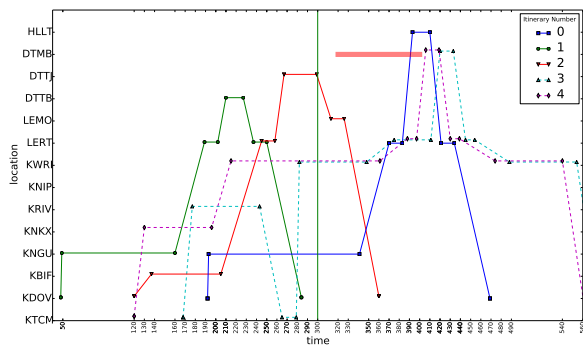
Figure 3: Event 0 (Same across all scenarios)



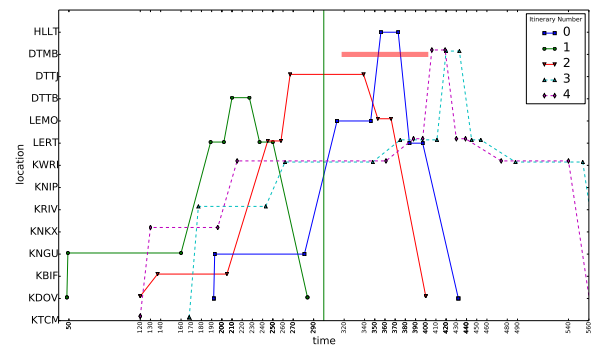
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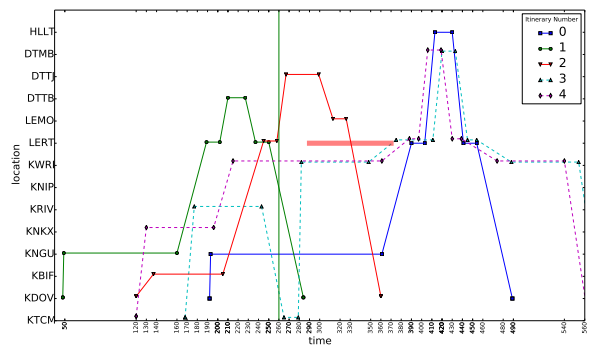


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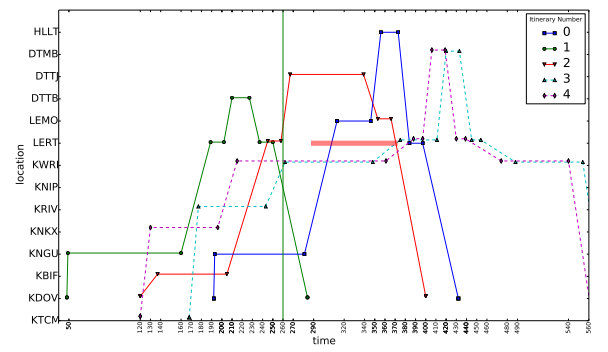


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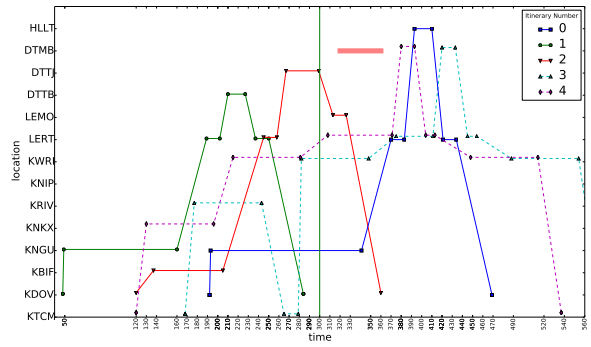
Figure 4: Scenario 0, Event1 - {Breakdown, Itin 0, Stop 2, Repair 80}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 80}



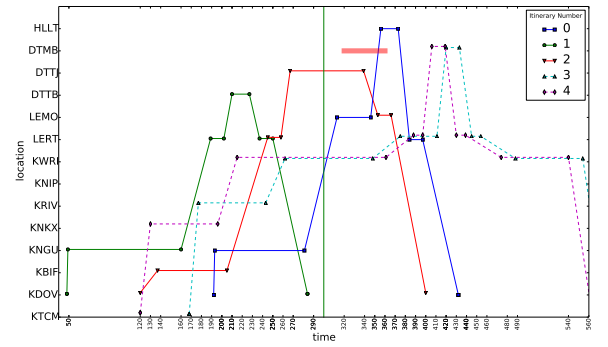
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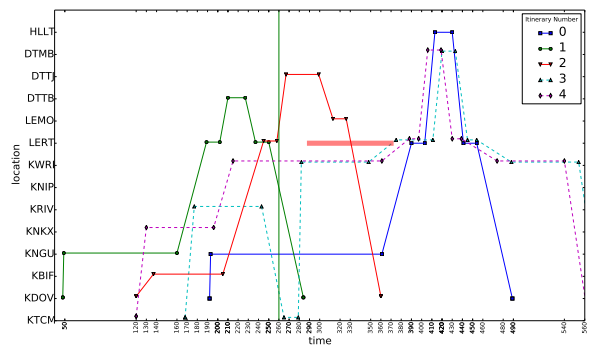


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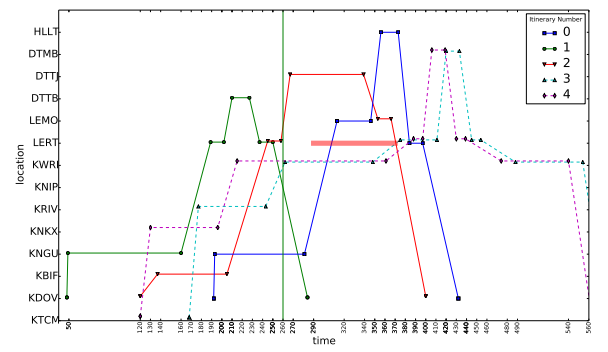


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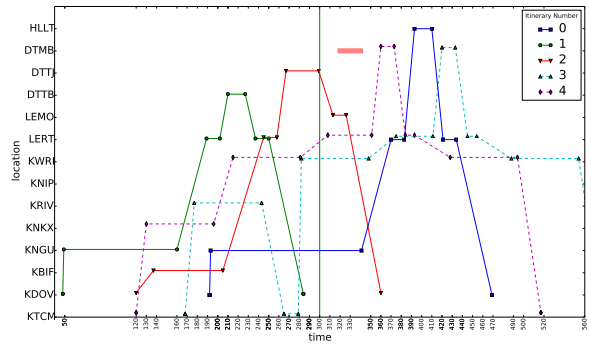
Figure 5: Scenario 1, Event1 - {Breakdown, Itin 0, Stop 2, Repair 80}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 60}



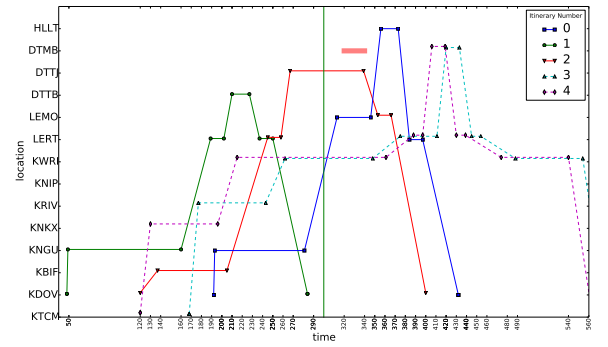
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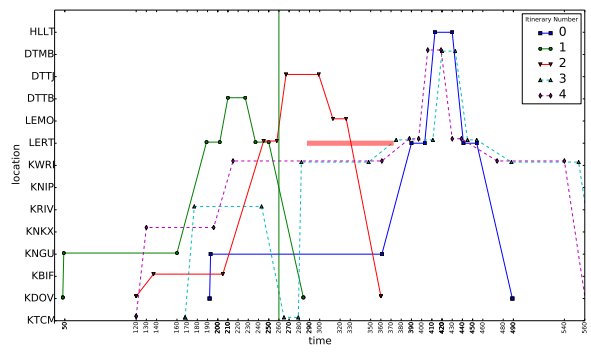


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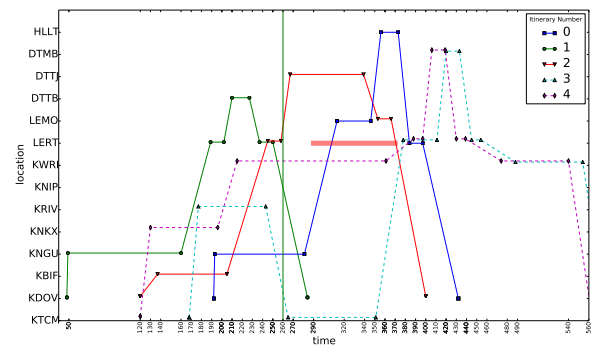


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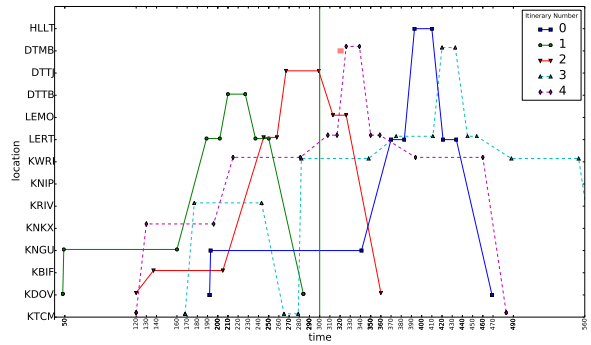
Figure 6: Scenario 2, Event1 - {Breakdown, Itin 0, Stop 2, Repair 80}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 40}



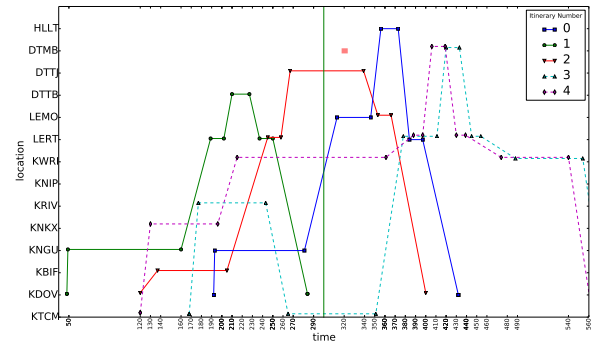
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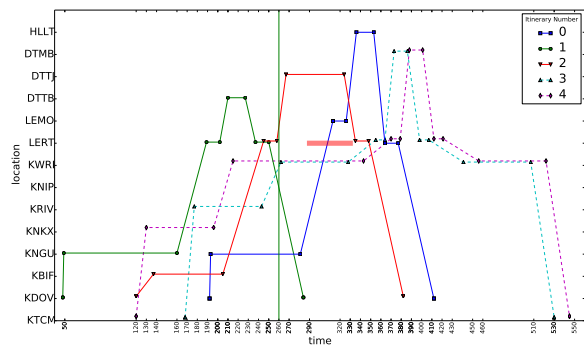


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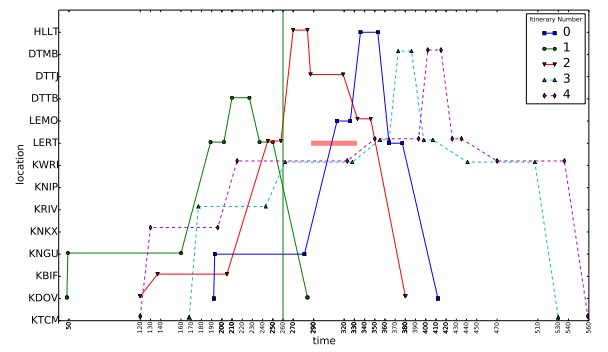


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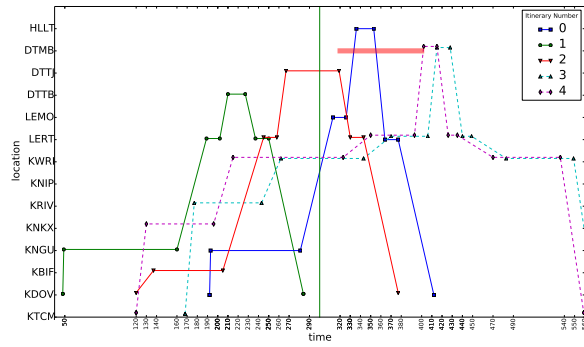
Figure 7: Scenario 3, Event1 - {Breakdown, Itin 0, Stop 2, Repair 80}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 13}



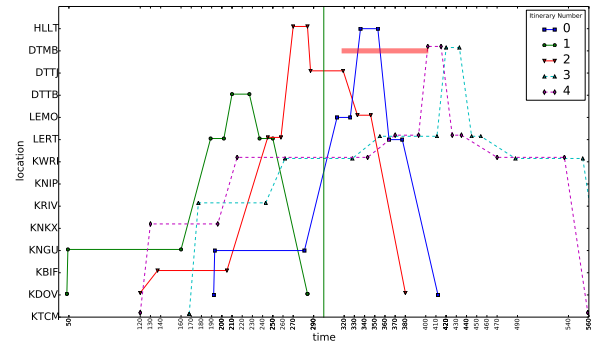
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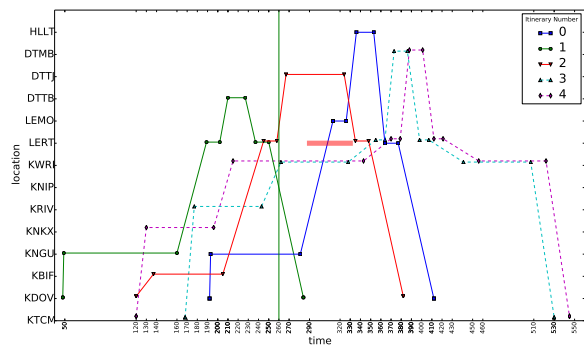


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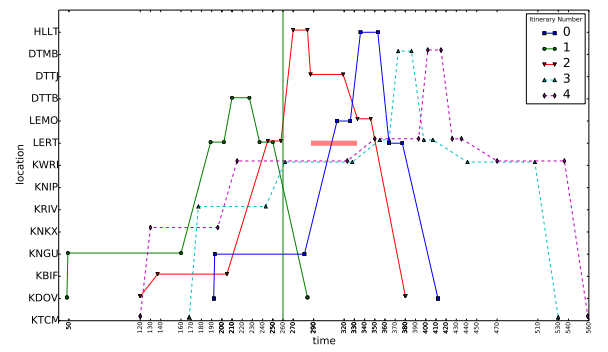


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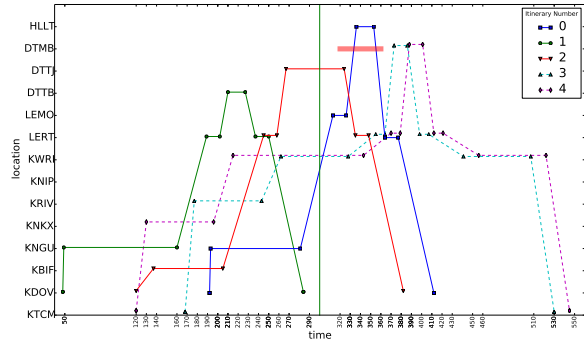
Figure 8: Scenario 4, Event1 - {Breakdown, Itin 0, Stop 2, Repair 60}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 80}



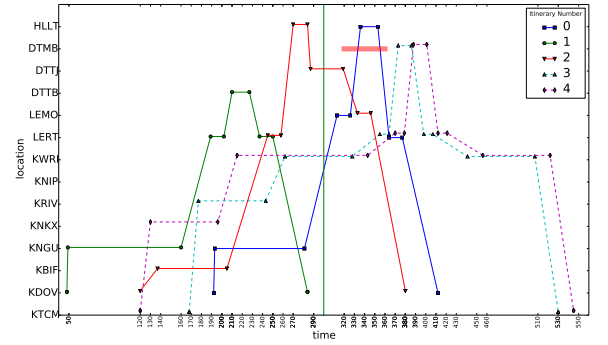
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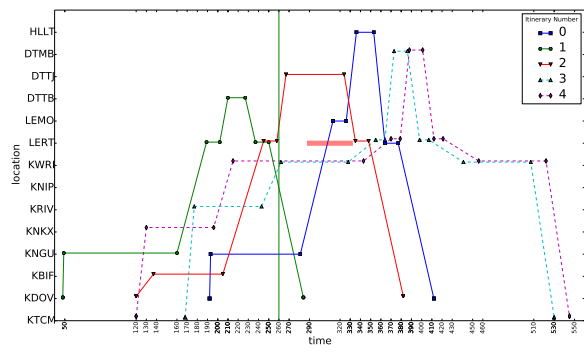


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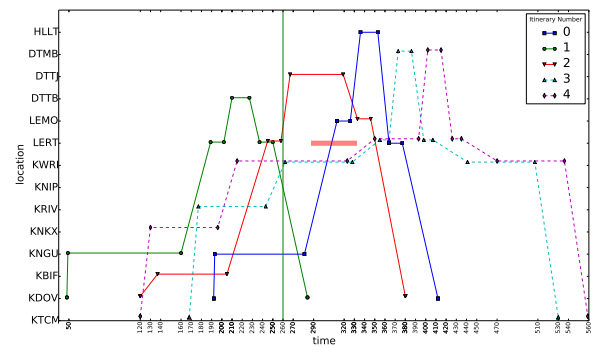


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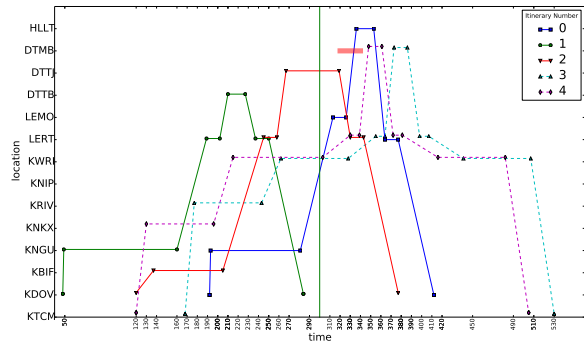
Figure 9: Scenario 5, Event1 - {Breakdown, Itin 0, Stop 2, Repair 60}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 60}



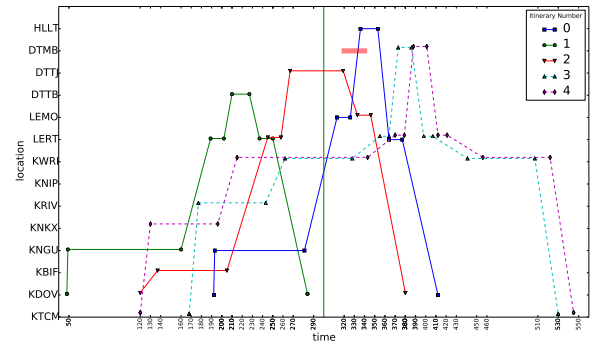
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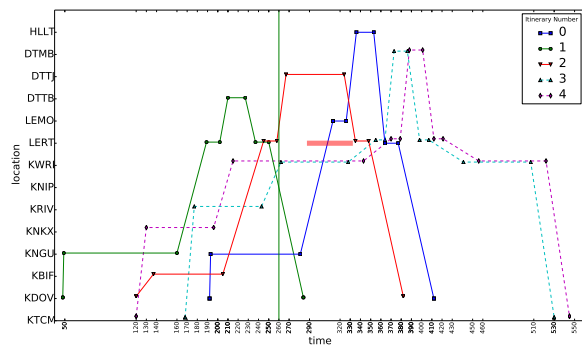


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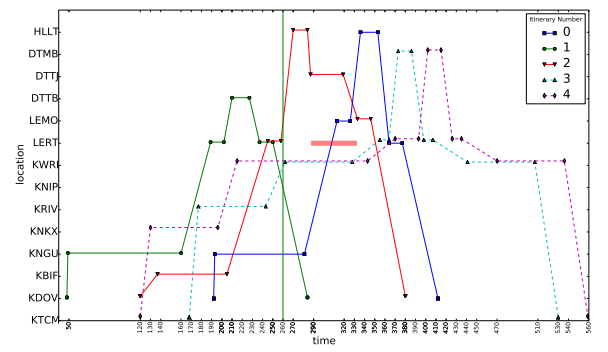


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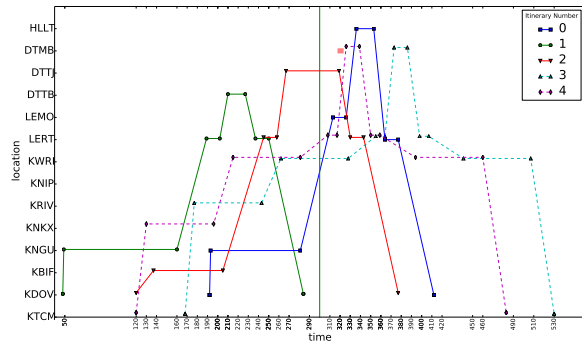
Figure 10: Scenario 6, Event1 - {Breakdown, Itin 0, Stop 2, Repair 60}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 40}



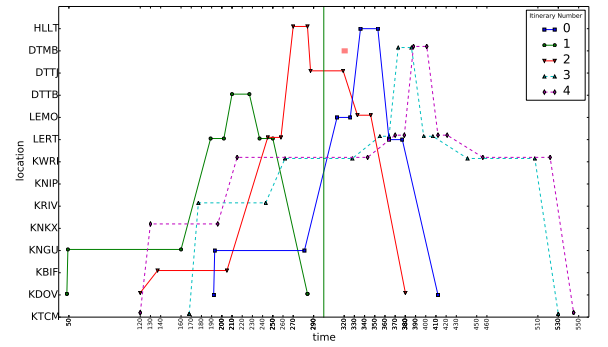
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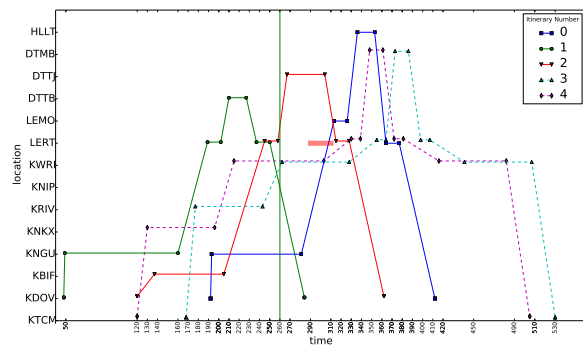


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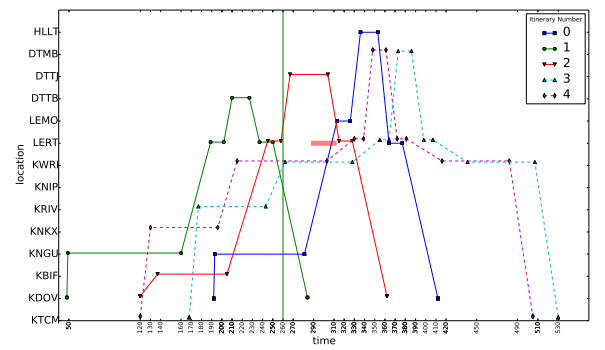


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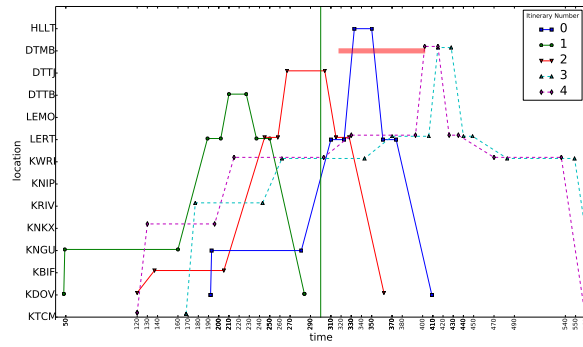
Figure 11: Scenario 7, Event1 - {Breakdown, Itin 0, Stop 2, Repair 60}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 13}



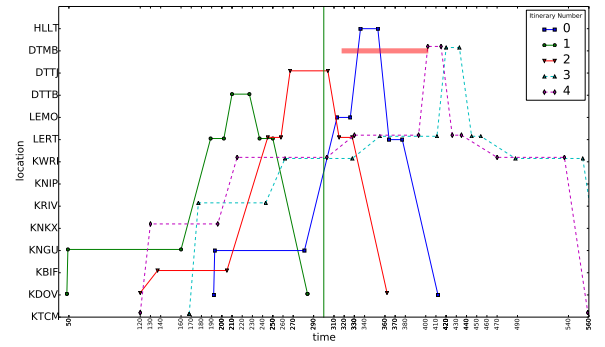
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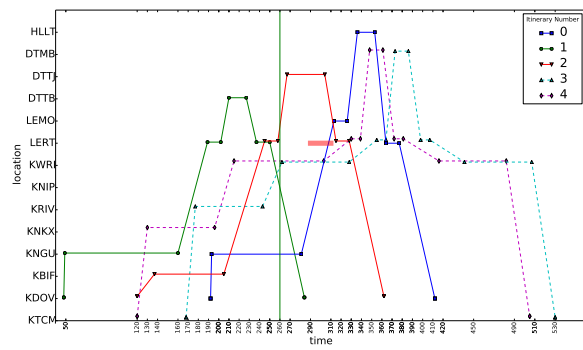


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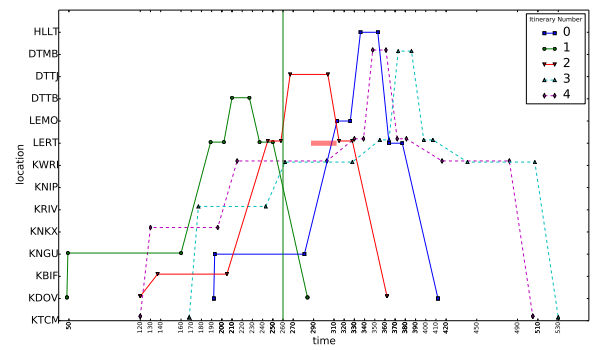


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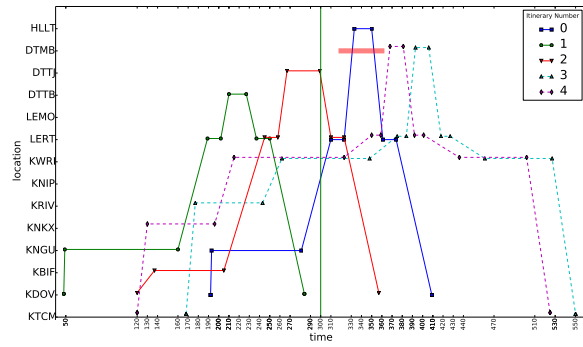
Figure 12: Scenario 8, Event1 - {Breakdown, Itin 0, Stop 2, Repair 40}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 80}



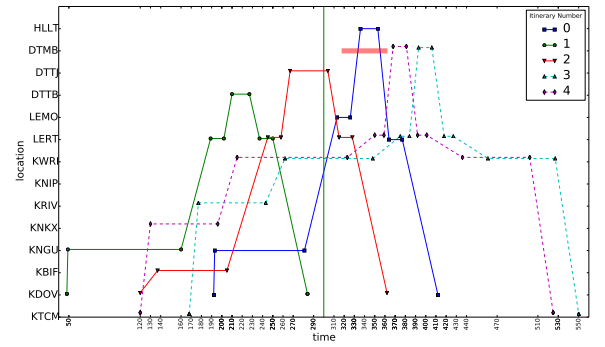
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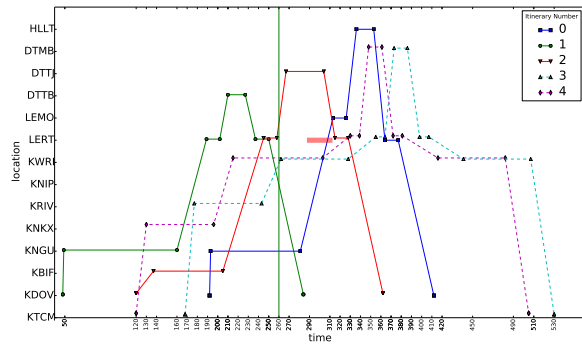


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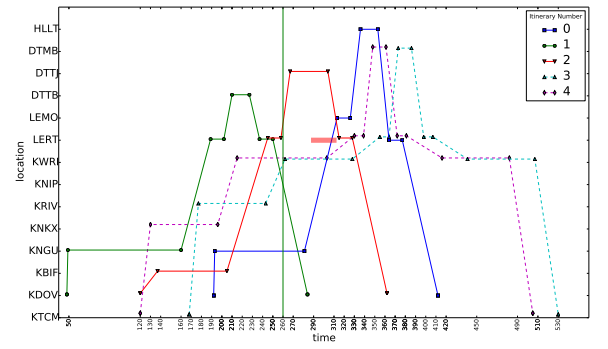


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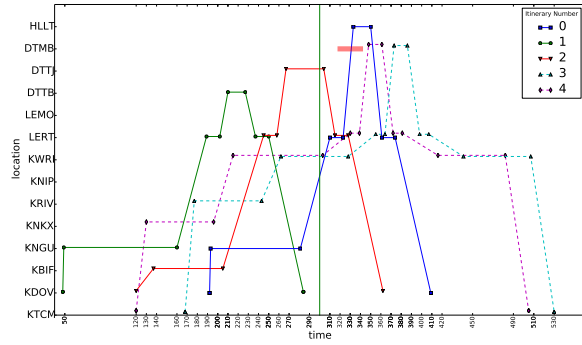
Figure 13: Scenario 9, Event1 - {Breakdown, Itin 0, Stop 2, Repair 40}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 60}



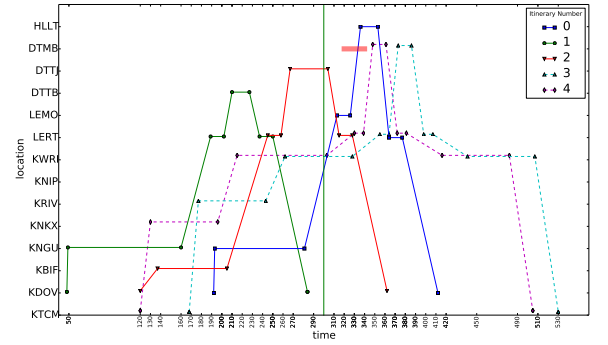
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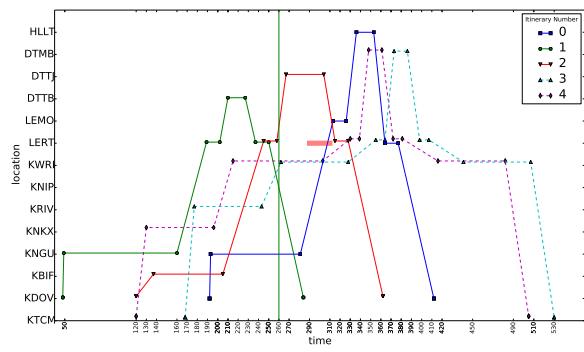


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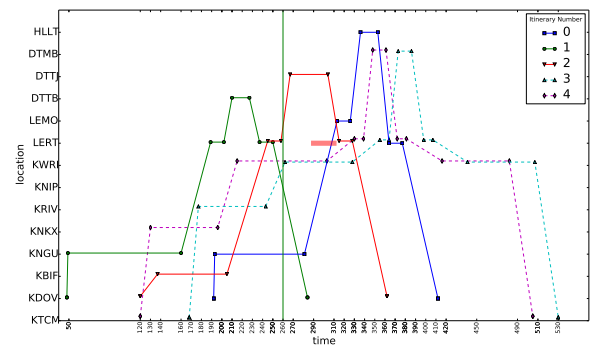


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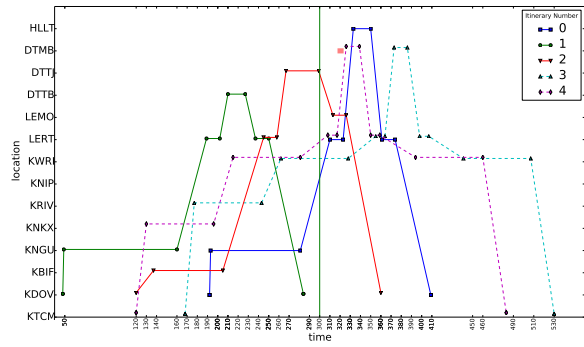
Figure 14: Scenario 10, Event1 - {Breakdown, Itin 0, Stop 2, Repair 40}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 40}



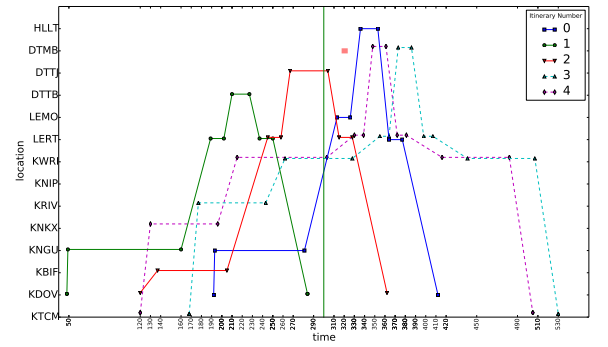
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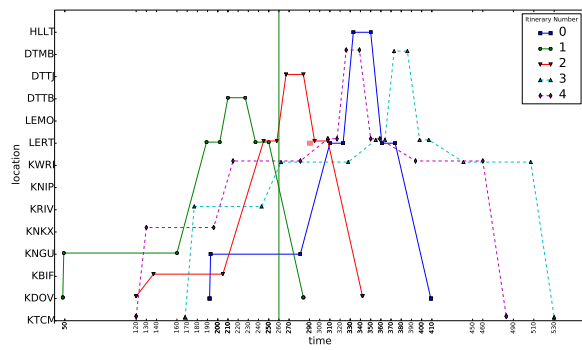


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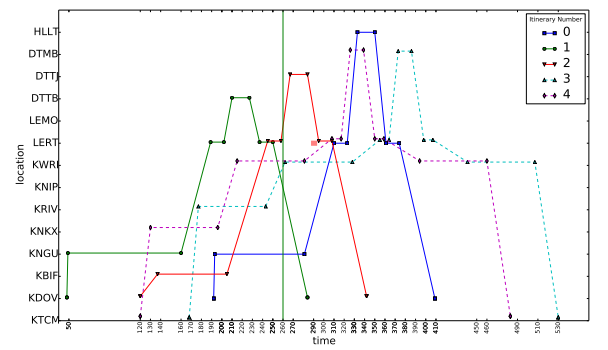


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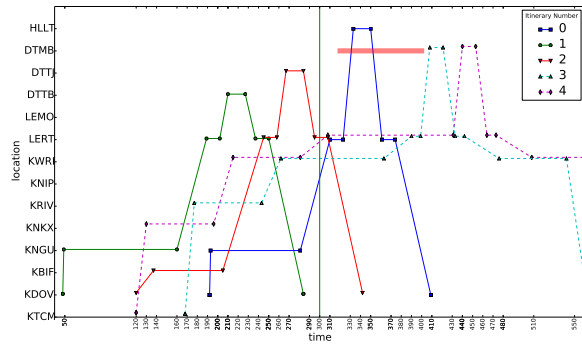
Figure 15: Scenario 11, Event1 - {Breakdown, Itin 0, Stop 2, Repair 40}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 13}



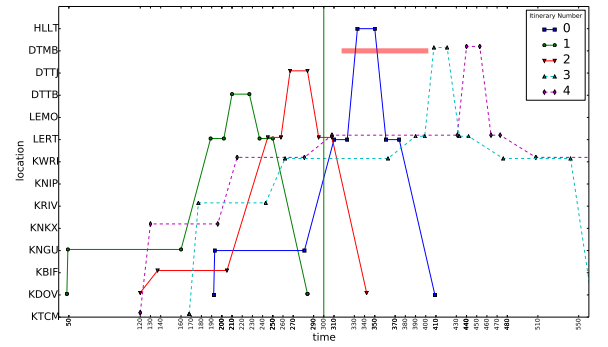
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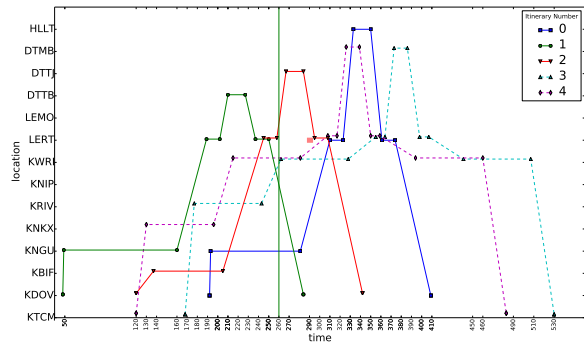


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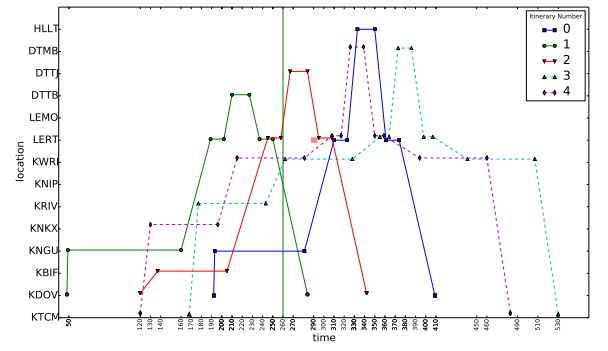


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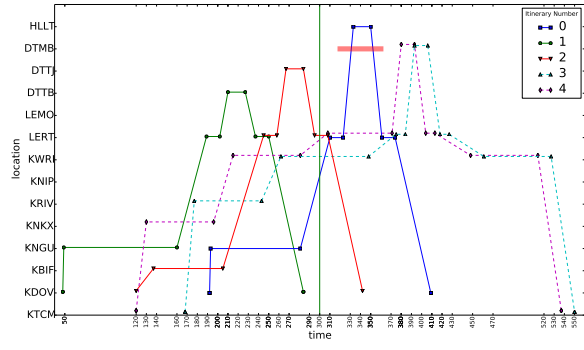
Figure 16: Scenario 12, Event1 - {Breakdown, Itin 0, Stop 2, Repair 13}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 80}



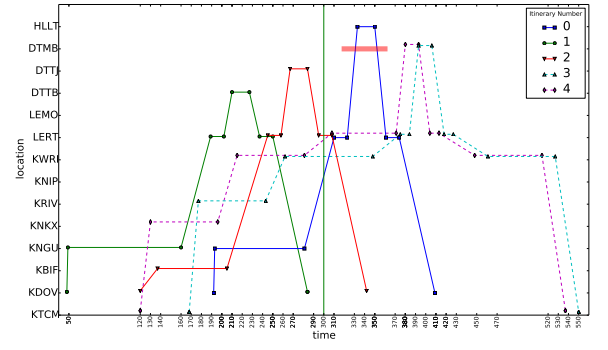
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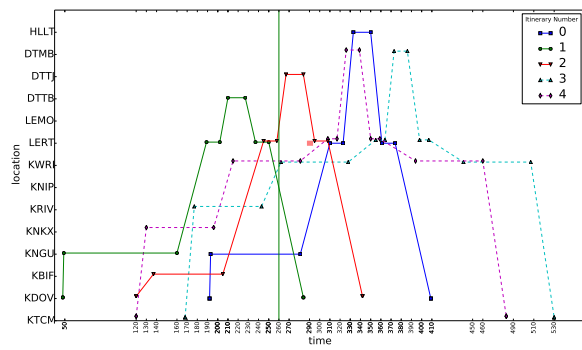


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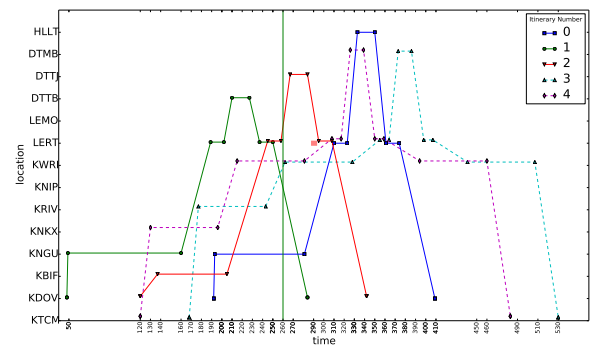


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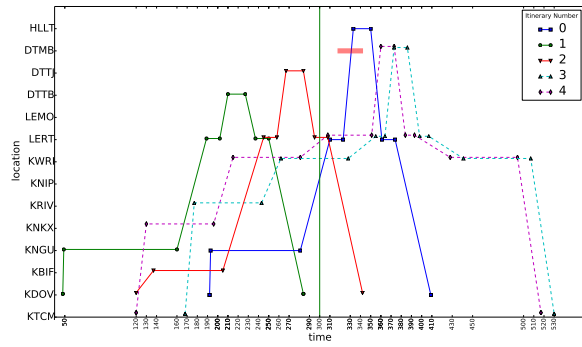
Figure 17: Scenario 13, Event1 - {Breakdown, Itin 0, Stop 2, Repair 13}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 60}



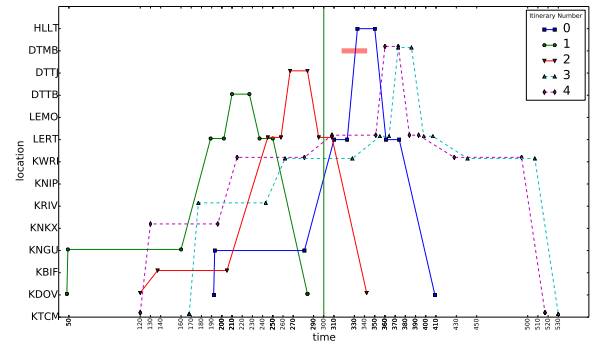
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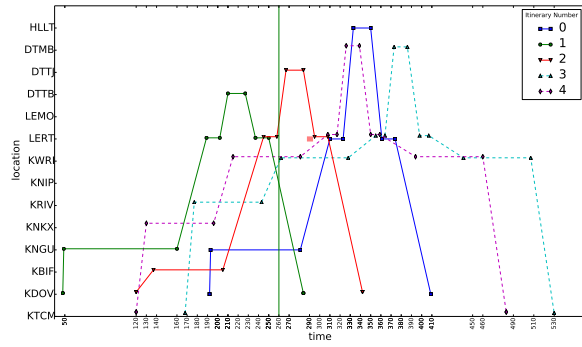


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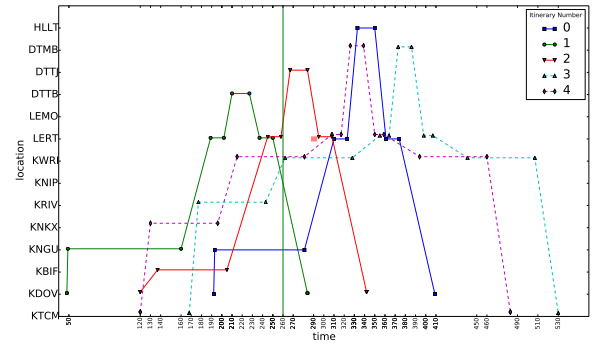


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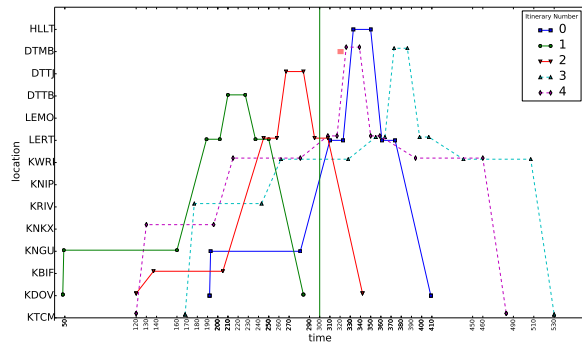
Figure 18: Scenario 14, Event1 - {Breakdown, Itin 0, Stop 2, Repair 13}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 40}



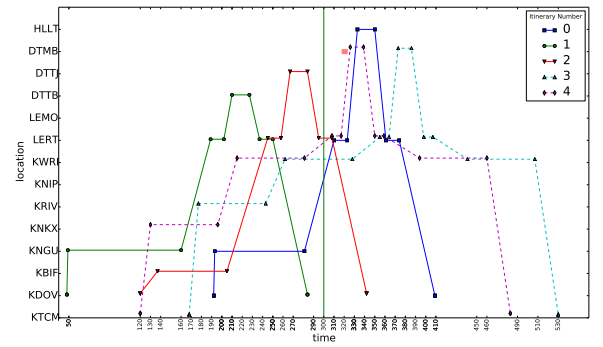
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(d)

Figure 19: Scenario 15, Event1 - {Breakdown, Itin 0, Stop 2, Repair 13}; Event2 - {Breakdown, Itin 2, Stop 4, Repair 13}

6. Computational Results

7. Conclusion

8. Future Work

References