

APPENDIX C. HIERARCHICAL TASK DESCRIPTIONS

PRIVATE VEHICLE OPERATIONS

- 1 PRE-DRIVE
 - 1.1 PRE-DRIVE INSPECTION
 - 1.2 PRE-DRIVE STARTUP
 - 1.3 PRE-DRIVE AUXILIARY SYSTEMS
 - 1.4 PLANNING
- 2 DRIVE
 - 2.1 NAVIGATION AND ROUTING
 - 2.2 GUIDANCE AND MANEUVERS
 - 2.3 CONTROL
 - 2.4 VEHICLE SYSTEM OPERATION AND MONITORING
 - 2.5 REACTING TO EMERGENCIES
- 5 IRANS
 - 5.1 TRIP PLANNING
 - 5.2 MULTI-MODE TRAVEL COORDINATION
 - 5.3 PRE-DRIVE ROUTE AND DESTINATION SELECTION
 - 5.4 DYNAMIC ROUTE SELECTION
 - 5.5 ROUTE GUIDANCE
 - 5.6 ROUTE NAVIGATION
 - 5.7 AUTOMATED TOLL COLLECTION
- 6 IMSIS
 - 6.1 BROADCAST SERVICES/ATTRACTIONS
 - 6.2 SERVICES/ATTRACTIONS DIRECTORY
 - 6.3 DESTINATION COORDINATION
 - 6.4 MESSAGE TRANSFER
- 7 ISIS
 - 7.1 ROADWAY GUIDANCE SIGN INFORMATION
 - 7.2 ROADWAY NOTIFICATION SIGN INFORMATION
 - 7.3 ROADWAY REGULATORY SIGN INFORMATION
- 8 IVSAWS
 - 8.1 IMMEDIATE HAZARD WARNING
 - 8.2 ROAD CONDITION INFORMATION
 - 8.3 AUTOMATIC AID REQUEST
 - 8.4 MANUAL AID REQUEST
 - 8.5 VEHICLE CONDITION MONITORING

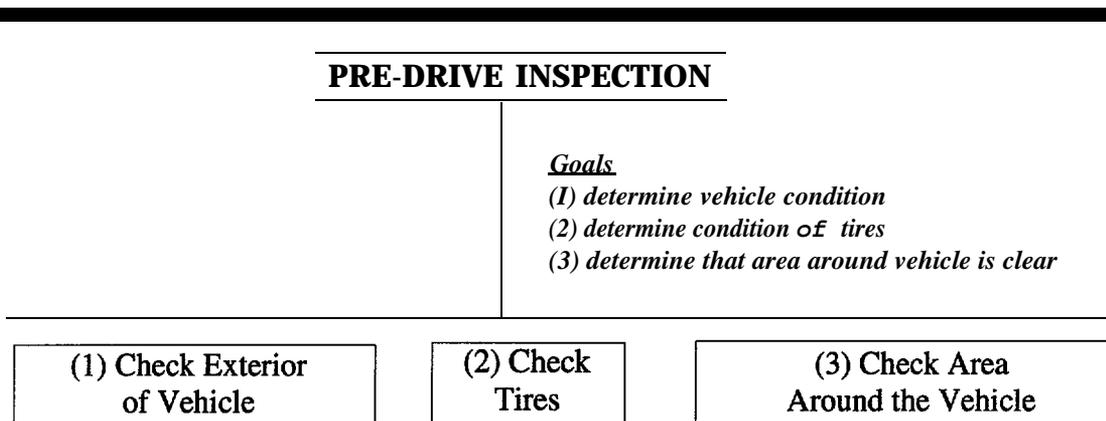
Hierarchical Task Description of Private Driving and ATIS

1.1 PRE-DRIVE INSPECTION

1.1.1 Check Exterior of the Vehicle

1.1.2 Check Tires

1.1.3 Check Area Around the Vehicle



Hierarchical Task Description of Private Driving and ATIS

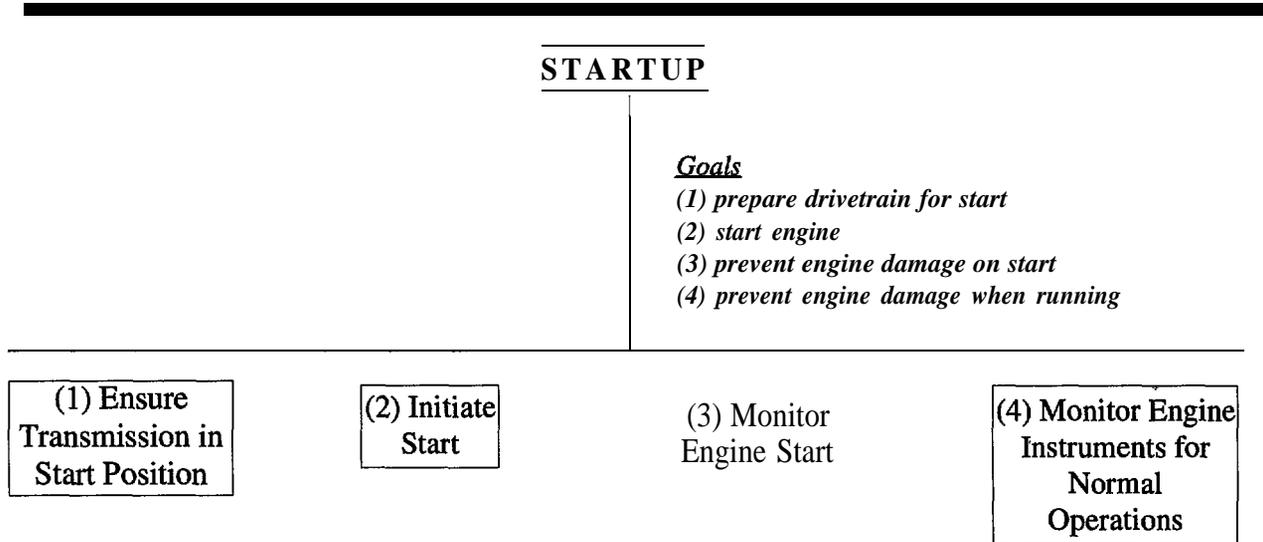
1.2 STARTUP

1.2.1 Ensure Transmission in Start Position

1.2.2 Initiate Start

1.2.3 Monitor Engine Start

1.2.4 Monitor Engine Instruments for Normal Operations



Hierarchical Task Description of Private Driving and ATIS

1.3 AUXILIARY SYSTEMS

1.3.1 Climate Control

1.3.1.1 Set climate controls as necessary

1.3.2 Turn Signals

1.3.2.1 Check operations

1.3.3 Communications

1.3.3.1 Broadcast radio/entertainment system

1.3.3.1.1 Turn on

1.3.3.1.2 "Select mode, station, program"

1.3.3.2 Two-way communications

1.3.3.2.1 Turn on

1.3.4 ATIS

1.3.4.1 Turn on

1.3.4.2 Verify system readiness

1.3.4.3 Initiate system operation

1.3.4.3.1 Input desired system parameters

1.3.4.3.2 Verify system parameters correct

1.3.5 Lighting

1.3.5.1 Turn on if necessary

1.3.6 Seats

1.3.6.1 Adjust seat if necessary

1.3.7 Mirrors

1.3.7.1 Adjust mirrors if necessary

1.3.8 Wipers/Windshield Washer

1.3.8.1 Turn on wipers/windshield washer as necessary

AUXILIARY SYSTEMS

Goals

- (1) establish comfortable conditions, clear windshield
- (2) make sure turn signals are working
- (3) prepare to gather and give information
- (4) prepare Advanced Traveler Information Systems for use
- (5) provide Eights to illuminate roadway and warn others
- (6) provide comfortable driving position
- (7) ensure rearward vision
- (8) clean and clear windshield

(1) Set Climate Controls

(2) Check Turn Signals

(3) Set Up Communications

(4) Set Up ATIS

(5) Turn on Lights

(6) Adjust Seats

(7) Adjust Mirrors

(8) Turn on Wipers

Goals

- (1) entertainment, public information
- (2) direct two-way communications with others

(1) Set up broadcast receiving system

(2) Set up two-way communications system

Hierarchical Task Description of Private Driving and ATIS

1.4 PLANNING

1.4.1 Destination Selection

1.4.1.1 Identify category of destination

1.4.1.2 Identify specific destination

1.4.2 Route Planning

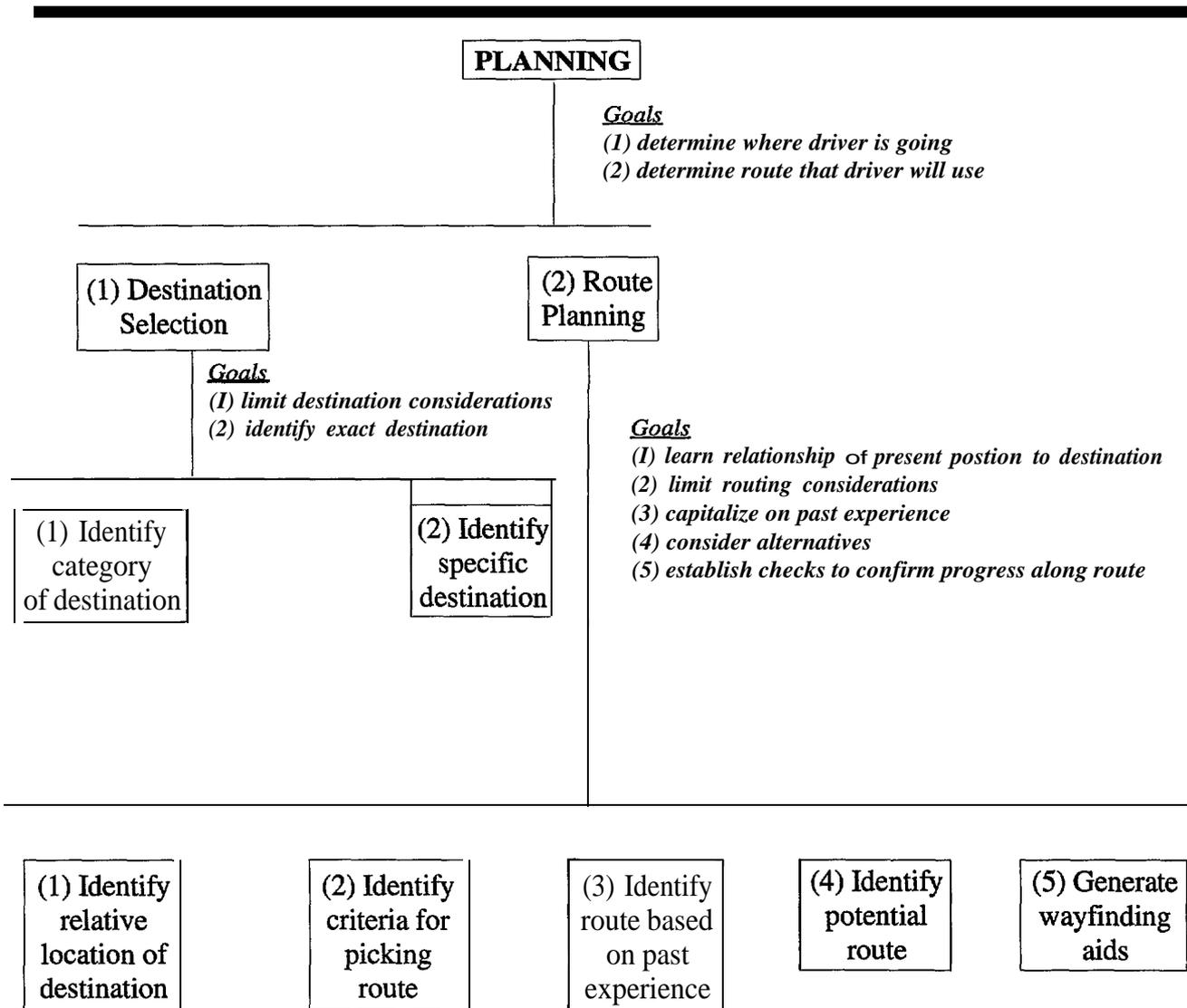
1.4.2.1 Identify relative location of destination

1.4.2.2 Identify criteria for picking route

1.4.2.3 Identify route based on past experience

1.4.2.4 Identify potential route

1.4.2.5 Generate wayfinding aids



Hierarchical Task Description of Private Driving and ATIS

2.1 NAVIGATION AND ROUTING

2.1.1 Wayfinding

2.1.1.1 Navigation

2.1.1.1.1 Identify present location

2.1.1.1.2 Determine relative direction and distance to destination

2.1.1.1.3 Use landmarks to determine orientation and present location

2.1.1.1.4 Compare expected location to map reference points and expectations

2.1.1.2 Route following

2.1.1.2.1 Identify next waypoint

2.1.1.2.2 Identify present location relative to waypoint

2.1.1.2.3 Identify required maneuver to proceed beyond the waypoint

2.1.1.2.4 Execute maneuvers

2.1.1.2.5 Verify present location and direction against expectation

2.1.2 Route Modification

2.1.2.1 Identify need

2.1.2.1.1 Identify traffic conditions and hazard on projected route

2.1.2.1.2 Evaluate consequence of traffic condition and hazard

2.1.2.1.3 Identify discrepancy between planned and actual route

2.1.2.2 Select and change

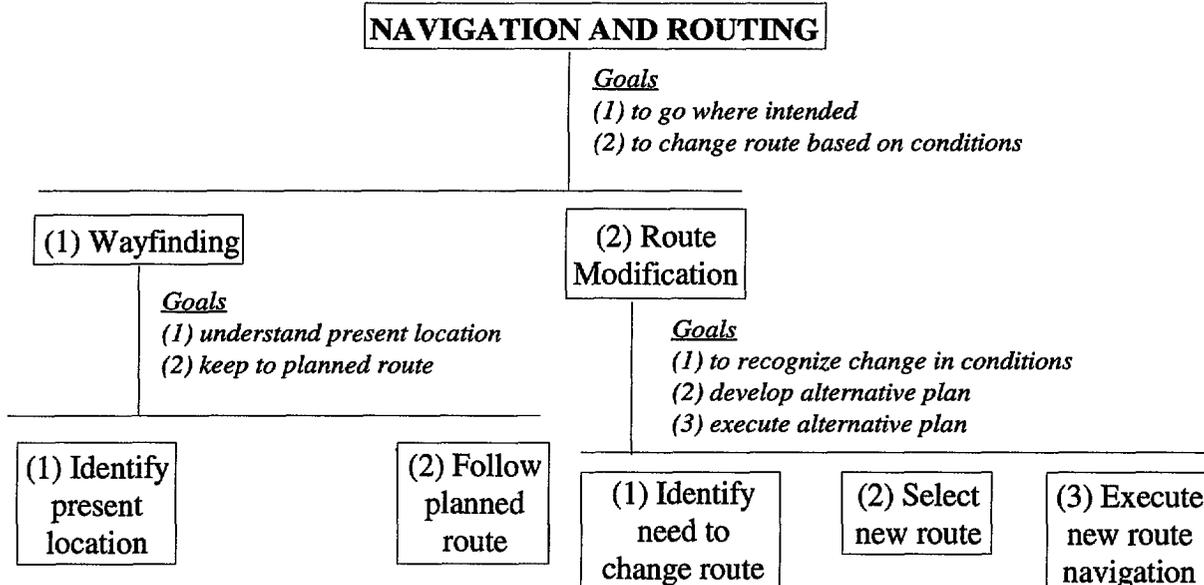
2.1.2.2.1 Determine position relative to traffic congestion or hazard

2.1.2.2.2 Identify alternate routes

2.1.2.2.3 Determine distance to waypoint

2.1.2.2.4 Determine required maneuver

2.1.2.2.5 Verify present location and direction against expectations



Hierarchical Task Description of Private Driving and ATIS

2.2 GUIDANCE AND MANEUVERS

2.2.1 Traffic Coordination

- 2.2.1.1 Monitor distance between own vehicle and others
- 2.2.1.2 Execute speed and position control to maintain separation
- 2.2.1.3 Monitor position of vehicle relative to traffic condition and waypoint
- 2.2.1.4 Execute maneuvers to accommodate traffic conditions and vehicle dynamics

2.2.2 Rule Compliance

- 2.2.2.1 Monitor environment for regulatory signs
- 2.2.2.2 Recall from memory regulatory information
- 2.2.2.3 Evaluate planned route relative to regulatory requirements
- 2.2.2.4 Compare current driving status against regulatory requirements
- 2.2.2.5 Execute driving maneuvers to comply
- 2.2.2.6 Execute speed and position control to comply

2.2.3 Maneuvering

- 2.2.3.1 Identify present speed and position
- 2.2.3.2 Identify distance to waypoint
- 2.2.3.3 Identify traffic condition
- 2.2.3.4 Adjust speed and lane position
- 2.2.3.5 Signal intended maneuver
- 2.2.3.6 Execute desired maneuver

2.2.4 Hazard Observation

- 2.2.4.1 Estimate hazard potential on planned route
- 2.2.4.2 Make adjustment to planned route to accommodate hazard
- 2.2.4.3 Monitor roadway surface and surroundings
- 2.2.4.4 Monitor traffic conditions for hazardous situations
- 2.2.4.5 Estimate hazard potential to vehicle
- 2.2.4.6 Execute speed and position control to compensate for hazard
- 2.2.4.7 Execute driving maneuver to compensate for hazard

GUIDANCE AND Maneuvers

<u>Goals</u> <i>(1) keep vehicle at safe distance from other vehicles</i> <i>(2) keep vehicle within regulated safety limits</i> <i>(3) cause vehicle to go where intended</i> <i>(4) avoid hazardous conditions</i>			
(1) Coordinate Vehicle Movements With Other Traffic	(2) Keep Speed and Other Activities Within What Regulations Require	(3) Control Car Direction and Speed to Reach Intended Destination	(4) Observe and Take Necessary Actions to Avoid Hazardous Conditions

Hierarchical Task Description of Private Driving and ATIS

2.3 CONTROL

2.3.1 Speed Control

2.3.1.1 Identify discrepancy between current and desired speed

2.3.1.2 Adjust throttle or brake to control speed

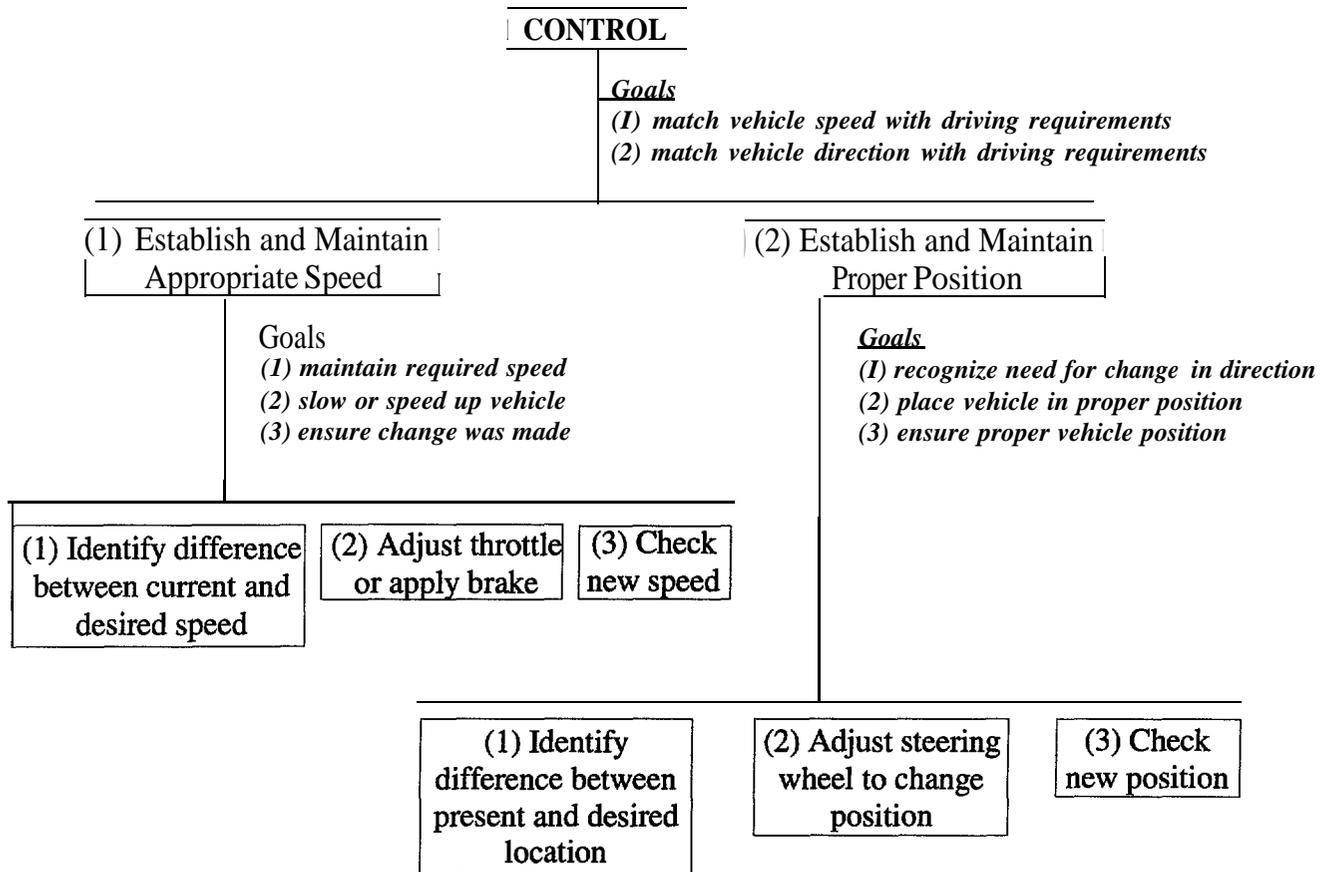
2.3.1.3 Verify adjustment of speed

2.3.2 Position Control

2.3.2.1 Identify discrepancy between current and desired lane positions

2.3.2.2 Adjust steering wheel to compensate

2.3.2.3 Verify adjustment of lane position

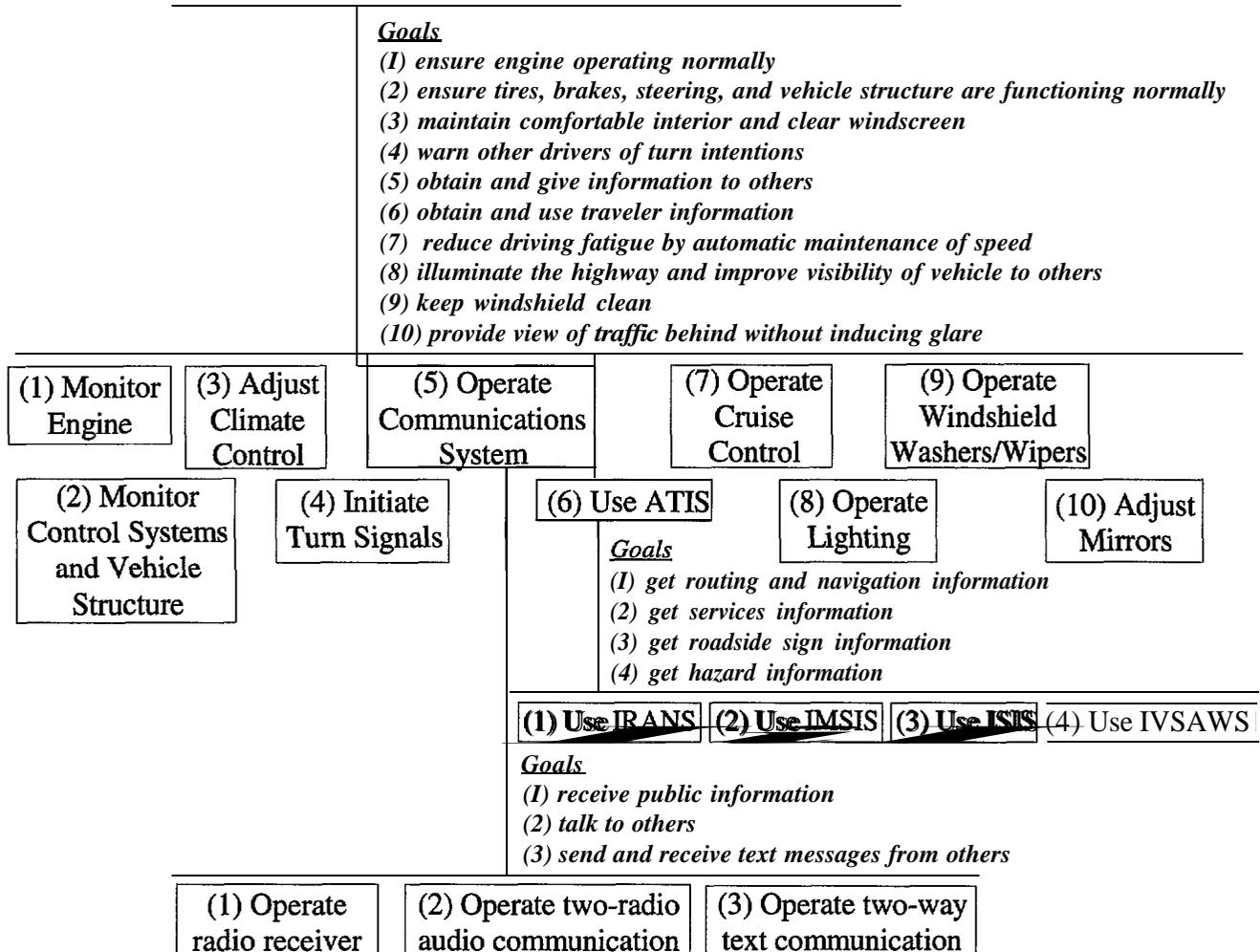


Hierarchical Task Description of Private Driving and ATIS

2.4 VEHICLE SYSTEM OPERATION AND MONITORING

- 2.4.1 Monitor Engine Operation
- 2.4.2 Monitor Control Systems and Vehicle Structure
- 2.4.3 Adjust Climate Control
- 2.4.4 Initiate Turn Signals
- 2.4.5 Operate Communications Systems
 - 2.4.5.1 Operate broadcast radio/entertainment system
 - 2.4.5.2 Operate two-way communications (audio)
 - 2.4.5.3 Operate two-way communications (text)
- 2.4.6 Use Advanced Traveler Information Systems (ATIS)
 - 2.4.6.1 Use In-Vehicle Routing and Navigation System (IRANS)
 - 2.4.6.2 Use In-Vehicle Motorist Services Information System (IMSIS)
 - 2.4.6.3 Use In-Vehicle Sign Information System (ISIS)
 - 2.4.6.4 Use In-Vehicle Safety Advisory and Warning System (IVSAWS)
- 2.4.7 Operate Cruise Control
- 2.4.8 Operate Lighting Systems
- 2.4.9 Operate Windshield Washers/Wipers
- 2.4.10 Adjust Rearview Mirrors

VEHICLE SYSTEM OPERATION AND MONITORING



Hierarchical Task Description of Private Driving and ATIS

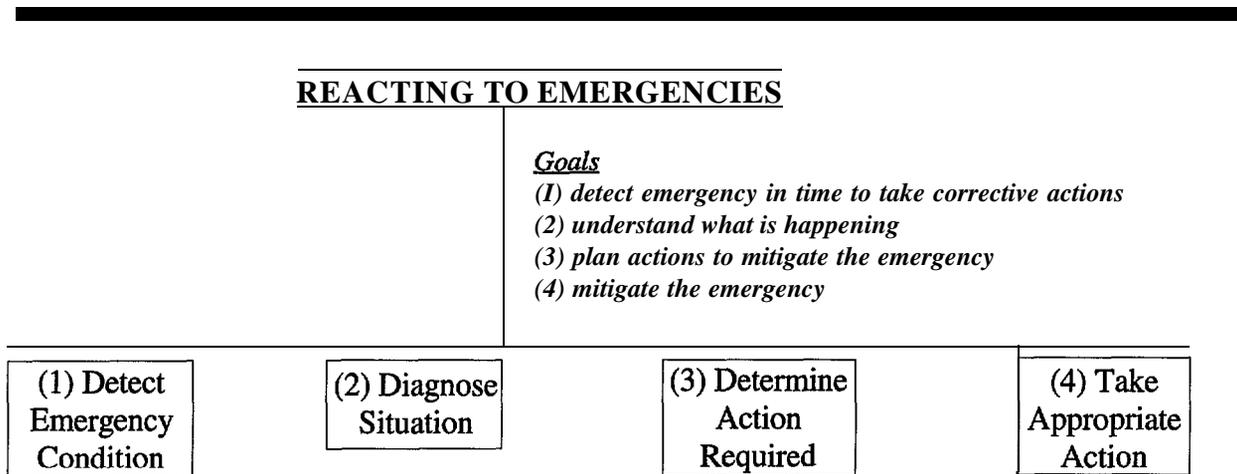
2.5 REACTING TO EMERGENCIES

2.5.1 Detect Emergency Condition

2.5.2 Diagnose Situation

2.5.3 Determine Action Required

2.5.4 Take Appropriate Action



Hierarchical Task Description of Private Driving and ATIS

5.1 TRIP PLANNING

5.1.1 Gather Information

5.1.1.1 Destination and stopping points

5.1.1.2 Desired route parameters

5.1.2 Input Information

5.1.2.1 Destination(s)

5.1.2.1.1 Enter destination(s)

5.1.2.1.2 Verify destination(s) entry correct

5.1.2.2 Route parameters

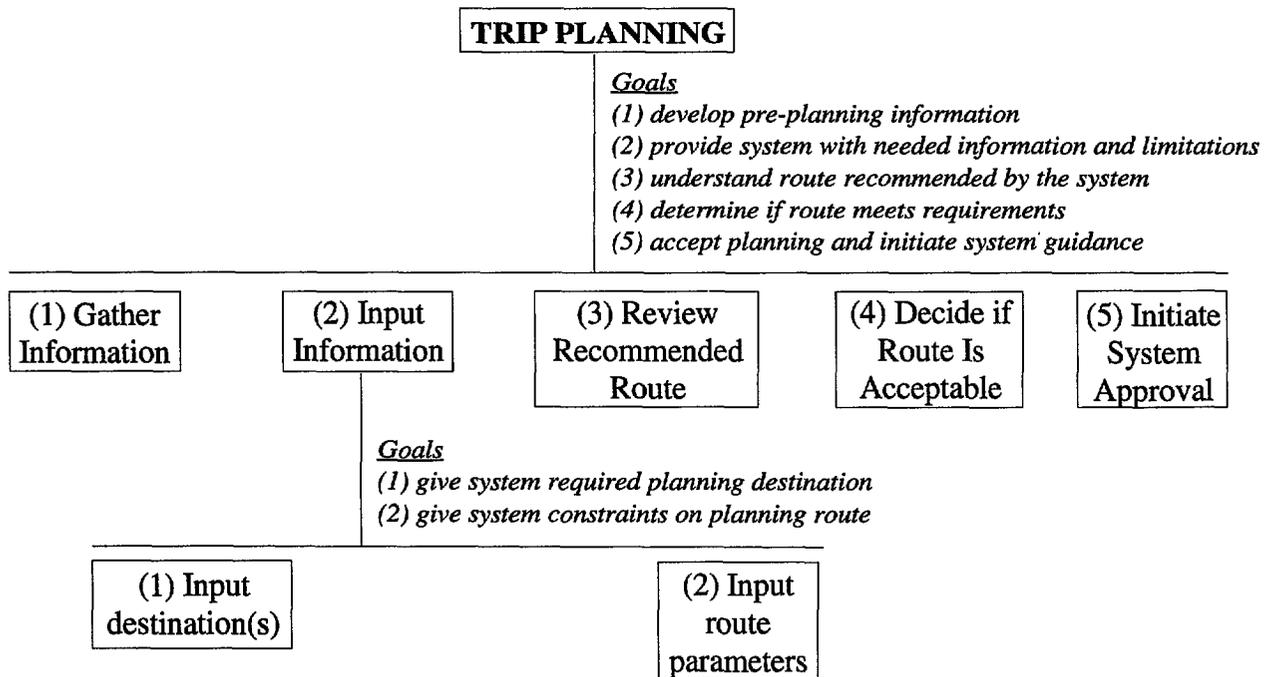
5.1.2.2.1 Enter route parameters

5.1.2.2.2 Verify route parameters correct

5.1.3 Review Recommended Route

5.1.4 Decide if Route Is Acceptable

5.1.5 Initiate System Approval



Hierarchical Task Description of Private Driving and ATIS

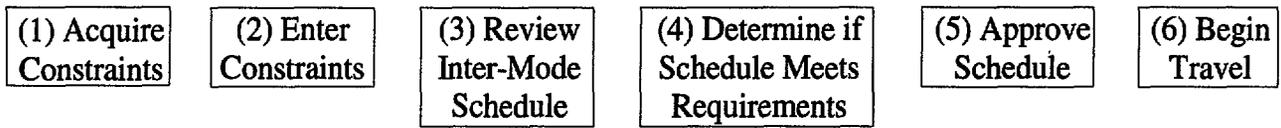
5.2 MULTI-MODE TRAVEL COORDINATION

- 5.2.1 Acquire Constraints
- 5.2.2 Enter Constraints
- 5.2.3 Review Inter-Mode Schedule
- 5.2.4 Determine if Inter-Mode Schedule Will Meet Requirements
- 5.2.5 Approve Inter-Mode Schedule
- 5.2.6 Begin First Mode Travel
 - 5.2.6.1 System update of arrival times
 - 5.2.6.1.1 Arrival time for current mode
 - 5.2.6.1.2 Arrival time for next mode
 - 5.2.6.2 System alerts of change in arrival time for next mode
 - 5.2.6.3 System computes change in destination arrival time
 - 5.2.6.4 System proposes new inter-mode schedule
 - 5.2.6.5 Determine new inter-mode schedule will meet requirements
 - 5.2.6.5.1 If will meet requirements, accept schedule
 - 5.2.6.5.2 If will not meet requirements, request different routing

MULTI-MODE TRAVEL COORDINATION

Goals

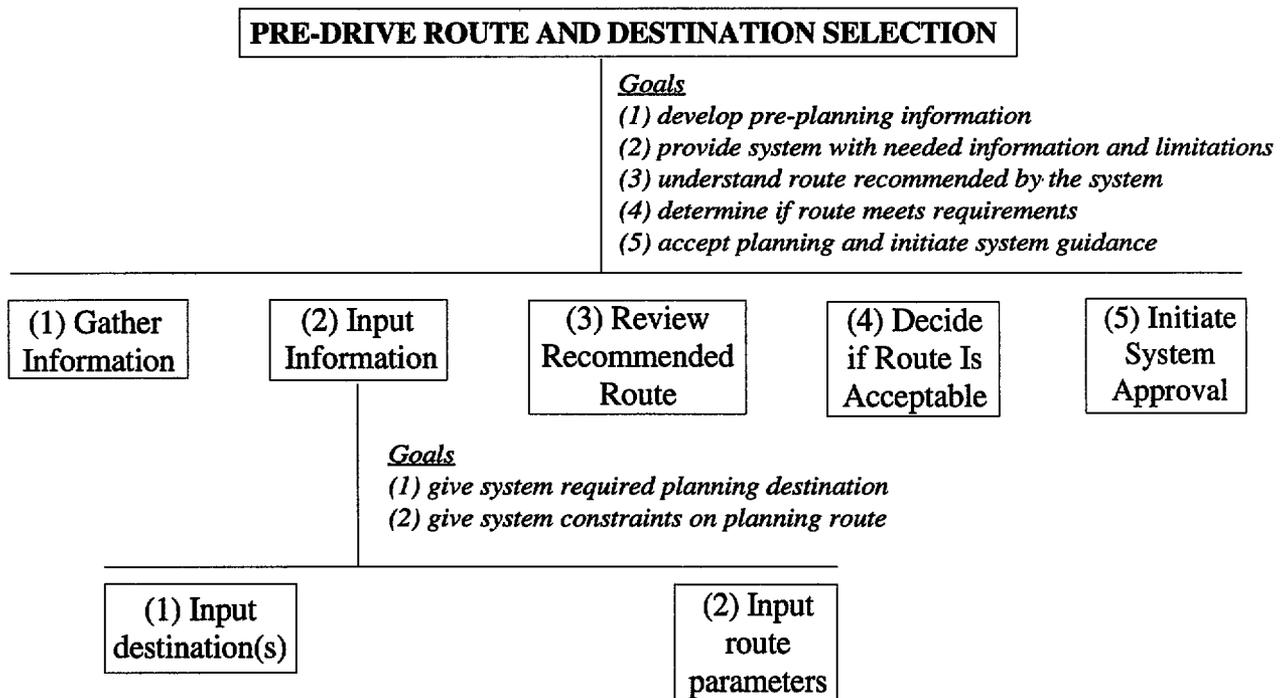
- (1) determine requirements for travel*
- (2) provide system with requirements*
- (3) understand suggested travel plans*
- (4) decide if suggested travel plans will meet needs*
- (5) initiate system coordination*
- (6) begin trip*



Hierarchical Task Description of Private Driving and ATIS

5.3 PRE-DRIVE ROUTE AND DESTINATION SELECTION

- 5.3.1 Gather Information
 - 5.3.1.1 Destination and stopping points
 - 5.3.1.2 Desired route parameters
- 5.3.2 Input Information
 - 5.3.2.1 Destination
 - 5.3.2.1.1 Enter destination
 - 5.3.2.1.2 Verify destination entry correct
 - 5.3.2.2 Route parameters
 - 5.3.2.2.1 Enter route parameters
 - 5.3.2.2.2 Verify route parameters correct
- 5.3.3 Review Recommended Route
- 5.3.4 Decide if Route Is Acceptable
- 5.3.5 Initiate System Approval



Hierarchical Task Description of Private Driving and ATIS

5.4 DYNAMIC ROUTE SELECTION

5.4.1 Driver-Initiated Dynamic Route Selection

- 5.4.1.1 Driver recognizes need for revised route
- 5.4.1.2 Initiate new route request of IRANS
- 5.4.1.3 System computes new route
- 5.4.1.4 System presents revised route
- 5.4.1.5 Driver reviews recommended route
- 5.4.1.6 Decide if recommended route is satisfactory
- 5.4.1.7 Initiate route approval

5.4.2 System-Initiated Dynamic Route Selection

- 5.4.2.1 System recognizes need for new route
- 5.4.2.2 System alerts driver of change in route conditions
- 5.4.2.3 System computes revised route recommendation
- 5.4.2.4 System presents revised route
- 5.4.2.5 Driver reviews recommended route
- 5.4.2.6 Decide if recommended route is satisfactory
- 5.4.2.7 Initiate route approval

DYNAMIC ROUTE SELECTION

Driver-Initiated Dynamic Route Selection/

Goals

- (1) detect change in conditions in time to affect outcome*
- (2) plan new route*
- (3) understand proposed new route*
- (4) determine if new route will meet requirements*
- (5) have system provide directions based on new route*

(1) Driver recognizes need for revised route

(2) Initiate request for new route

(3) Review recommended route

(4) Decide if route is satisfactory

(5) Initiate route approval

DYNAMIC ROUTE SELECTION

System-Initiated Dynamic Route Selection

Goals

- (1) automatic update of route based on conditions*
- (2) provide most efficient route given conditions*
- (3) understand recommendations*
- (4) determine if recommendations are acceptable*
- (5) initiate route guidance along new route*

(1) System recognizes need for revised route

(2) Initiate request for new route

(3) Review recommended route

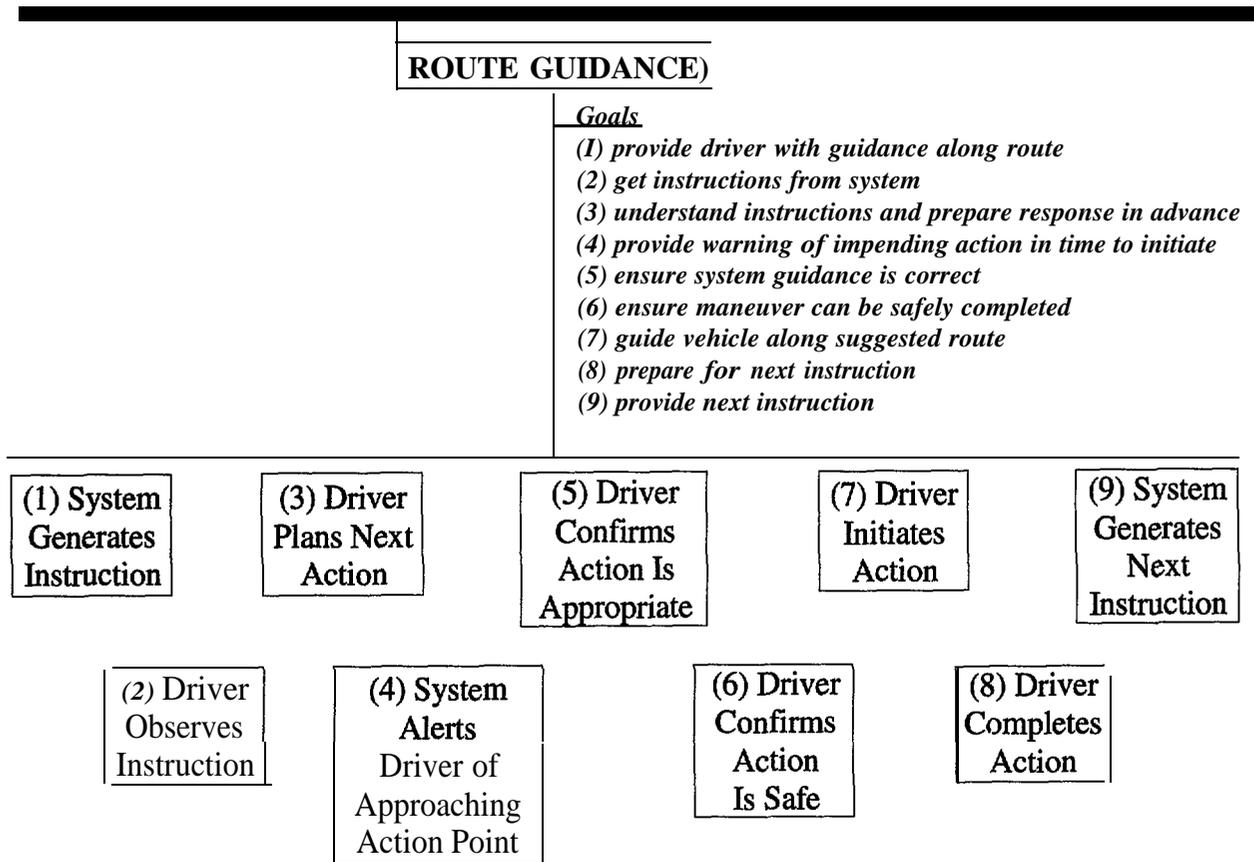
(4) Decide if new route is satisfactory

(5) Initiate route approval

Hierarchical Task Description of Private Driving and ATIS

5.5 ROUTE GUIDANCE

- 5.5.1 System Generates Instruction
- 5.5.2 Driver Observes Instruction for Next Action
- 5.5.3 Driver Plans for Next Route Action
- 5.5.4 System Alerts Driver of Approaching Action Point
- 5.5.5 Driver Confirms Action Is Appropriate
- 5.5.6 Driver Confirms That Action Is Safe
- 5.5.7 Driver Initiates Necessary Action
- 5.5.8 Driver Completes Necessary Action
- 5.5.9 System Generates Next Instruction



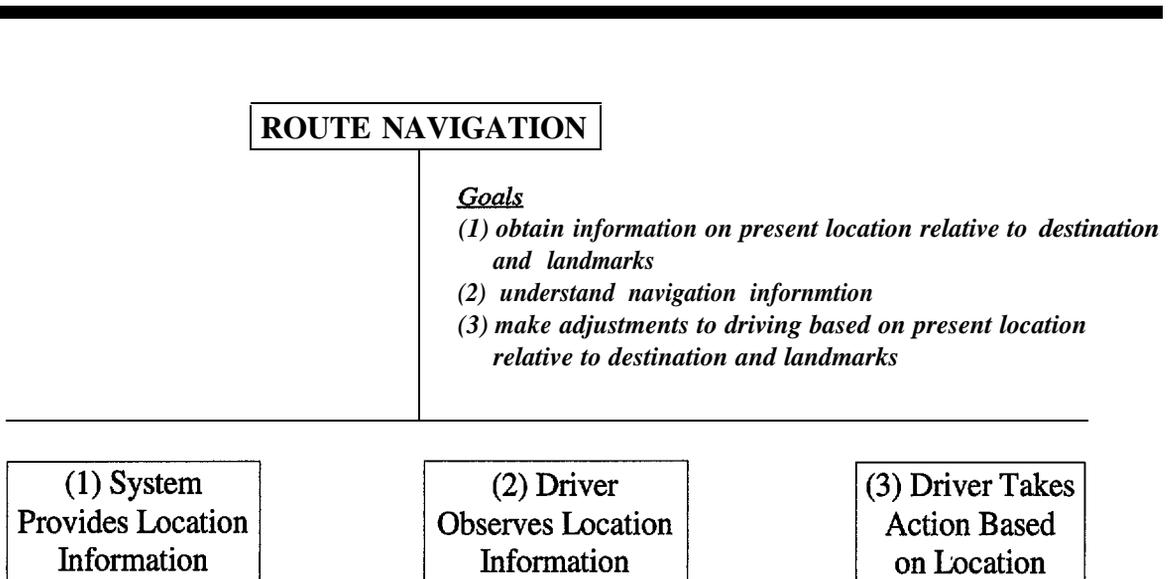
Hierarchical Task Description of Private Driving and ATIS

5.6 ROUTE NAVIGATION

5.6.1 System Provides Navigation Information

5.6.2 Driver Observes Navigation Information

5.6.3 Driver Takes Action Based on Navigation Information



Hierarchical Task Description of Private Driving and ATIS

5.7 AUTOMATED TOLL COLLECTION

5.7.1 Vehicle Approaches Toll Area

5.7.2 System Queries Vehicle for Toll Tag or Automatic Vehicle Identification (AVI)

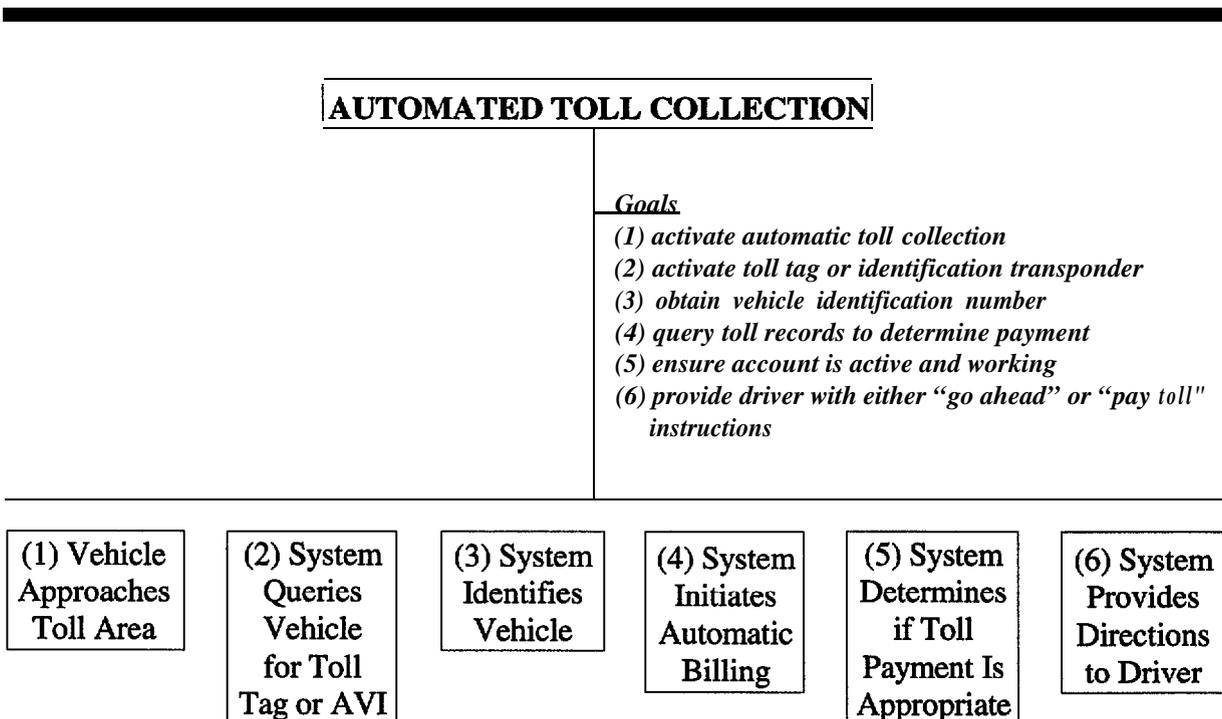
5.7.3 System Identifies Vehicle

5.7.4 System Initiates Automatic Billing or Deducts Toll

5.7.5 System Determines if Toll Payment Is Appropriate

5.7.5.1 If yes, indicate to driver that he or she is free to continue

5.7.5.2 If no, indicate driver must stop at toll booth



Hierarchical Task Description of Private Driving and ATIS

6.1 BROADCAST SERVICES/ATTRACTIONS

6.1.1 Driver Initiates Broadcast Services Receiving Equipment

6.1.2 Driver Enters Screening Parameters

6.1.2.1 Services of interest

6.1.2.2 Proximity to route or area of interest

6.1.3 System Provides Announcement of Services as Approached

6.1.4 Driver Takes Desired Action Regarding Services

BROADCAST SERVICES/ATTRACTIONS

Goals

(1) prepare equipment to receive broadcast services

(2) limit alert messages by type and proximity

(3) provide information desired

(4) use information

(1) Initiate
Broadcast
Services
Receiving
Equipment

(2) Enter
Screening
Parameters

(3) Receive
Announcement
of Services

(4) Take
Desired
Action

Hierarchical Task Description of Private Driving and ATIS

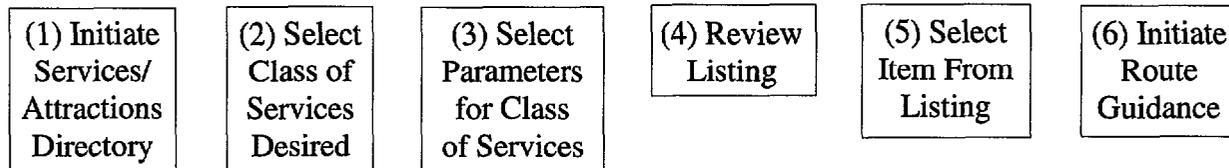
6.2 SERVICES/ATTRACTIONS DIRECTORY

- 6.2.1 Driver Initiates Services/Attractions Directory
- 6.2.2 Select Class of Services Desired
- 6.2.3 Select Parameters for Class of Services
- 6.2.4 Review Listing
- 6.2.5 Select Item From Listing
- 6.2.6 Initiate Route Guidance to Selected Item

SERVICES/ATTRACTIONS DIRECTORY

Goals

- (1) prepare system to provide services/attractions listing*
- (2) reduce search to specific type of services/attractions wanted*
- (3) limit search to specific area, distance, or other characteristic*
- (4) review possible selections*
- (5) determine specific location of desired services/attractions*
- (6) obtain directions to services/attractions*



Hierarchical Task Description of Private Driving and ATIS

6.3 DESTINATION COORDINATION

6.3.1 Select or Program Destination

6.3.2 Initiate Destination Coordination

6.3.3 Obtain Verification of Coordination

6.3.4 Update Coordination as Required

6.3.4.1 System update of arrival time

6.3.4.2 Driver updates changes in services required

DESTINATION COORDINATION |

Goals

(1) *determine where going*

(2) *have system coordinate modes of travel*

(3) *get coordination information*

(4) *change coordination as required*

(1) Select
or Program
Destination

(2) Initiate
Destination
Coordination

(3) Obtain
Verification
of Coordination

(4) Update
Coordination
as Required

Hierarchical Task Description of Private Driving and ATIS

6.4 MESSAGE TRANSFER

6.4.1 Message Sent From Vehicle

6.4.1.1 Driver generates message

6.4.1.1.1 Preset message using menu or programmed keys

6.4.1.1.2 Text message generated by keyboard or other device

6.4.1.2 Driver initiates message transfer

6.4.1.3 System indicates message delivery and receipt

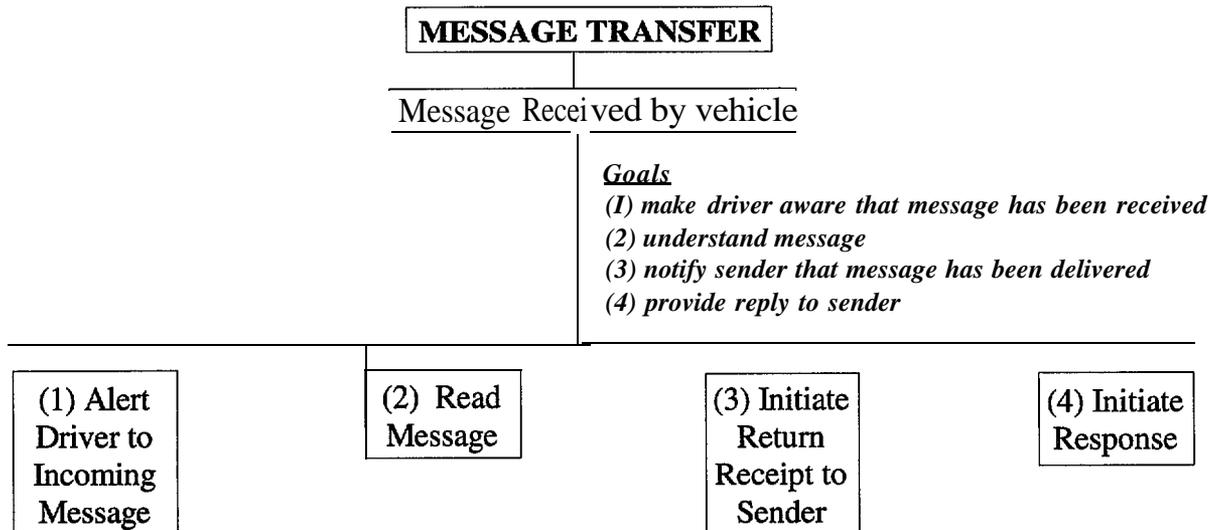
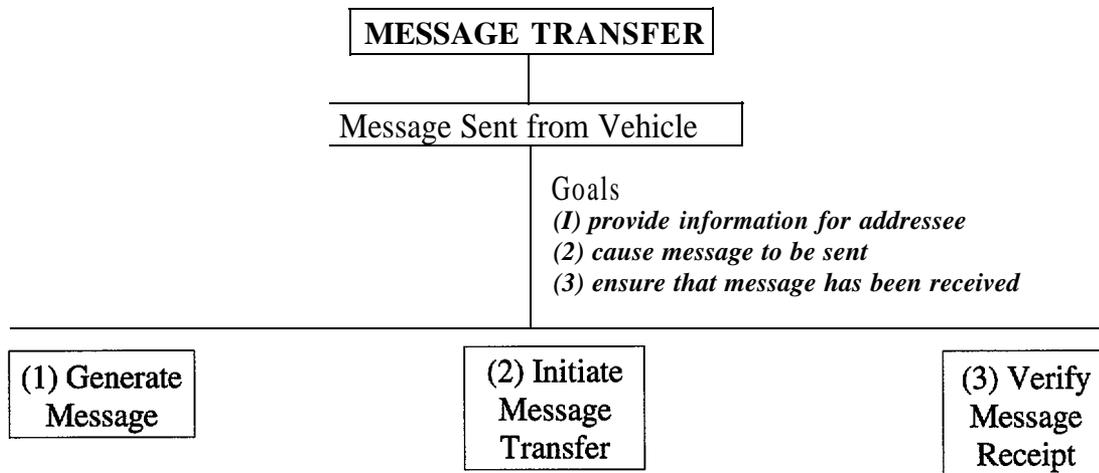
6.4.2 Message Received by Vehicle

6.4.2.1 System alerts driver to receipt of message

6.4.2.2 Driver reads message

6.4.2.3 System notifies sender that message has been received

6.4.2.4 Driver initiates response if necessary



Hierarchical Task Description of Private Driving and ATIS

7.1 ROADWAY GUIDANCE SIGN INFORMATION

- 7.1.1 System Monitors ISIS Input
- 7.1.2 Select Roadway Guidance Sign Information
- 7.1.3 System Presents Selected Sign Information
- 7.1.4 Driver Acts on Sign Information as Desired

ROADWAY GUIDANCE SIGN INFORMATION

Goals

- (1) monitor roadway guidance sign signals or location*
- (2) match signals with desired parameters*
- (3) present information to driver*
- (4) use information*

(1) Monitor
ISIS Input

(2) Select Roadway
Guidance Sign
Information

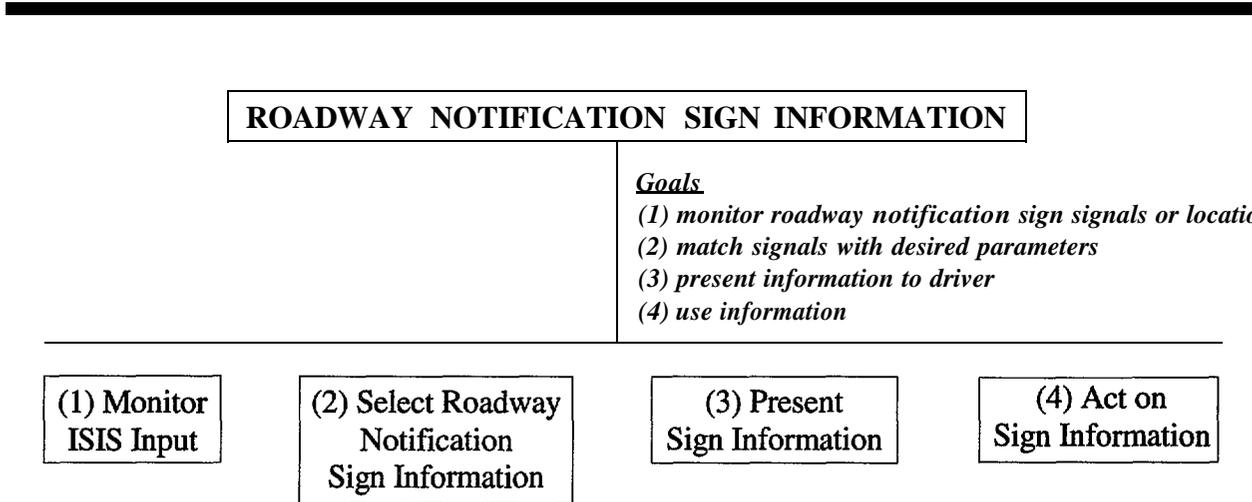
(3) Present
Sign Information

(4) Act on
Sign Information

Hierarchical Task Description of Private Driving and ATIS

7.2 ROADWAY NOTIFICATION SIGN INFORMATION

- 7.2.1 System Monitors ISIS Input
- 7.2.2 Select Roadway Notification Sign Information
- 7.2.3 System Presents Selected Sign Information
- 7.2.4 Driver Acts on Sign Information as Desired



Hierarchical Task Description of Private Driving and ATIS

7.3 ROADWAY REGULATORY SIGN INFORMATION

- 7.3.1 System Monitors ISIS Input
- 7.3.2 Select Roadway Regulatory Sign Information
- 7.3.3 System Presents Selected Sign Information
- 7.3.4 Driver Acts on Sign Information as Desired

ROADWAY REGULATORY SIGN INFORMATION

Goals

- (1) monitor roadway regulatory sign signals or location
- (2) match signals with desired parameters
- (3) present information to driver
- (4) use information

(1) Monitor
ISIS Input

(2) Select Roadway
Regulatory
Sign Information

(3) Present
Sign Information

(4) Act on
Sign Information

Hierarchical Task Description of Private Driving and ATIS

8.1 IMMEDIATE HAZARD WARNING

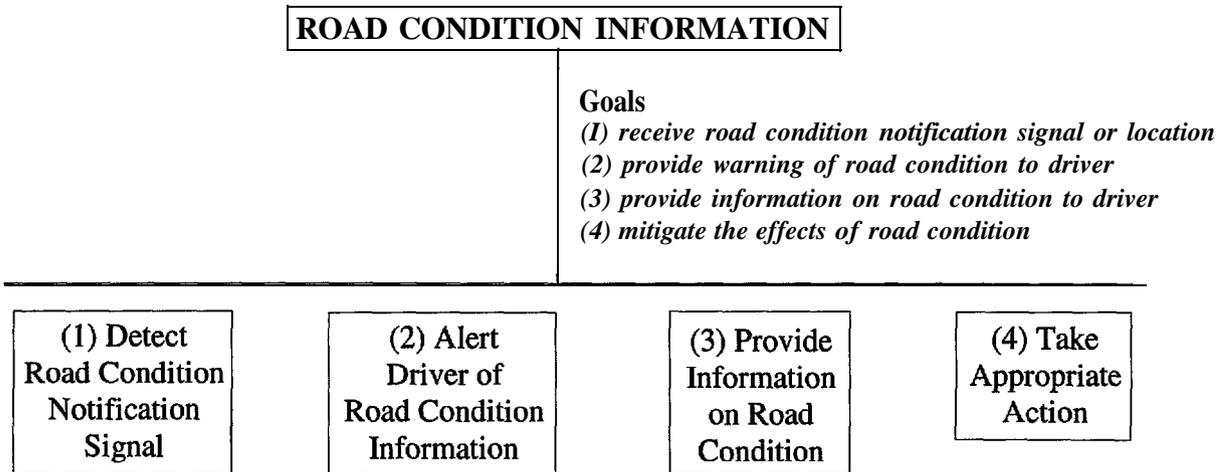
- 8.1.1 System Detects Hazard Notification
- 8.1.2 System Alerts Driver of Hazard
- 8.1.3 System Provides Information on Hazard Type
- 8.1.4 Driver Takes Appropriate Action in Response to Hazard

IMMEDIATE HAZARD WARNING				
<p><i>Goals</i></p> <p><i>(1) receive hazard condition notification signal or location</i></p> <p><i>(2) provide warning of hazardous condition to driver</i></p> <p><i>(3) provide information on hazardous condition to driver</i></p> <p><i>(4) mitigate the hazard</i></p>				
<table style="width: 100%; border: none;"> <tr> <td style="border: 1px solid black; padding: 5px; width: 25%; text-align: center;"> (1) Detect Hazard Notification Signal </td> <td style="border: none; width: 25%;"></td> <td style="border: none; width: 25%;"></td> <td style="border: 1px solid black; padding: 5px; width: 25%; text-align: center;"> (4) Take Appropriate Action </td> </tr> </table>	(1) Detect Hazard Notification Signal			(4) Take Appropriate Action
(1) Detect Hazard Notification Signal			(4) Take Appropriate Action	

Hierarchical Task Description of Private Driving and ATIS

8.2 ROAD CONDITION INFORMATION

- 8.2.1 System Detects Road Condition Notification
- 8.2.2 System Alerts Driver of Road Condition Notification
- 8.2.3 System Provides Information on Road Condition
- 8.2.4 Driver Takes Appropriate Action in Response to Road Condition

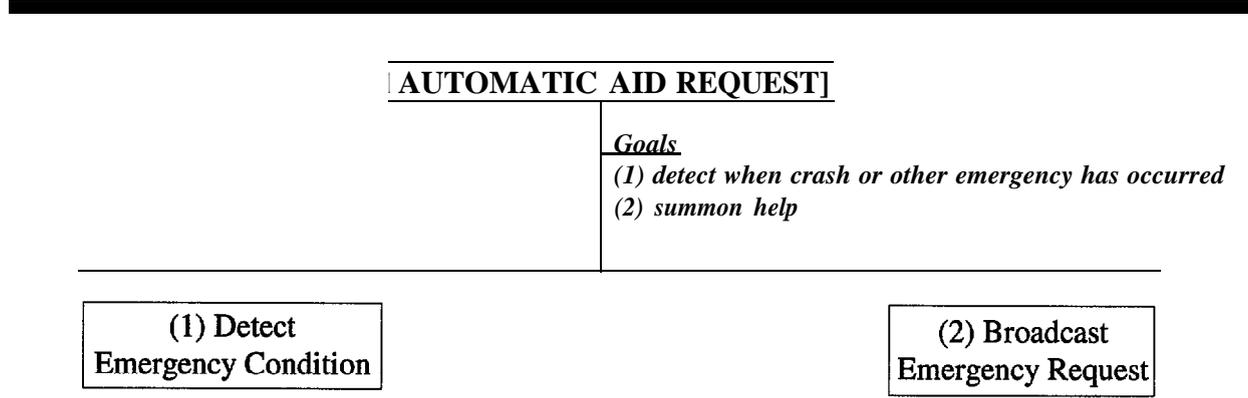


Hierarchical Task Description of Private Driving and ATIS

8.3 AUTOMATIC AID REQUEST

8.3.1 System Detects Emergency Condition

8.3.2 System Broadcasts Emergency Request



Hierarchical Task Description of Private Driving and ATIS

8.4 MANUAL AID REQUEST

8.4.1 Driver Activates Manual Aid Request

8.4.1.1 Aid required

8.4.1.2 Urgency

8.4.2 System Sends Request as Well as Vehicle Location

8.4.3 System Acknowledges Request Received

8.4.4 System Gets Update of Arrival Time for Aid

8.4.5 Notifies Driver of Arrival Time for Aid

MANUAL AID REQUEST

Goals

(1) activate system to request aid

(2) provide vehicle location

(3) provide feedback to driver that message has been received

(4) obtain information on arrival time for aid

(5) provide driver with information on arrival time

(1) Initiate
Manual Aid
Request

(2) Send
Request
and Vehicle
Location

(3) Acknowledge
Request
Received

(4) Receive
Update of
Arrival Time
for Aid

(5) Notifies
Driver of
Arrival Time
for Aid

Hierarchical Task Description of Private Driving and ATIS

8.5 VEHICLE CONDITION MONITORING

- 8.5.1 System Monitors Vehicle Parameters
- 8.5.2 System Detects Abnormal Condition
- 8.5.3 System Alerts Driver
- 8.5.4 System Provides Description of Problem
- 8.5.5 Driver Takes Appropriate Action

VEHICLE CONDITION MONITORING

Goals

- (1) early detection of mechanical and electrical problems*
- (2) initiate alert sequence when condition exceeds threshold*
- (3) provide driver with warning of problem*
- (4) provide driver with information on the problem*
- (5) mitigate the possible consequences of the problem*

(1) Monitor
Vehicle
Parameters

(2) Detect
Abnormal
Condition

(3) Alert
Driver

(4) Provide
Description
of Problem

(5) Take
Appropriate
Action

COMMERCIAL VEHICLE OPERATIONS

- 1 PRE-DRIVE
 - 1.1 PRE-DRIVE INSPECTION
 - 1.2 STARTUP
 - 1.3 AUXILIARY SYSTEMS
 - 1.4 PLANNING
- 2 DRIVE
 - 2.1 NAVIGATION AND ROUTING
 - 2.2 GUIDANCE AND MANEUVERS
 - 2.3 CONTROL
 - 2.4 VEHICLE SYSTEM OPERATION AND MONITORING
 - 2.5 REACTING TO EMERGENCIES
- 51RANs
 - 5.1 TRIP PLANNING
 - 5.2 MULTI-MODE TRAVEL COORDINATION
 - 5.3 PRE-DRIVE ROUTE AND DESTINATION SELECTION
 - 5.4 DYNAMIC ROUTE SELECTION
 - 5.5 ROUTE GUIDANCE
 - 5.6 ROUTE NAVIGATION
 - 5.7 AUTOMATED TOLL COLLECTION
- 6 IMSIS
 - 6.1 BROADCAST SERVICES/ATTRACTIONS
 - 6.2 SERVICES/ATTRACTIONS DIRECTORY
 - 6.3 DESTINATION COORDINATION
 - 6.4 MESSAGE TRANSFER
- 7 ISIS
 - 7.1 ROADWAY GUIDANCE SIGN INFORMATION
 - 7.2 ROADWAY NOTIFICATION SIGN INFORMATION
 - 7.3 ROADWAY REGULATORY SIGN INFORMATION
 - 7.4 ROAD RESTRICTION INFORMATION
- 8 IVSAWS
 - 8.1 IMMEDIATE HAZARD WARNING
 - 8.2 ROAD CONDITION INFORMATION
 - 8.3 AUTOMATIC AID REQUEST
 - 8.4 MANUAL AID REQUEST
 - 8.5 VEHICLE CONDITION MONITORING
- 9 CVO FUNCTIONS
 - 9.1 FLEET RESOURCE MANAGEMENT
 - 9.2 DISPATCH
 - 9.3 REGULATORY ENFORCEMENT

Hierarchical Task Description of Commercial Vehicles'

1.1 PRE-DRIVE INSPECTION

1.1.1 Check Exterior of the Vehicle

1.1.1.1 Inspect wheels

1.1.1.2 Inspect tires

1.1.1.3 Inspect brakes

1.1.1.4 Inspect suspension

1.1.2 Check Tires

1.1.2.1 Inspect steering wheel

1.1.2.2 Inspect brake pedal

1.1.2.3 Inspect clutch pedal

1.1.2.4 Inspect accelerator pedal

1.1.3 Check Area Around the Vehicle

1.1.3.1 Check hydraulic brakes

1.1.3.2 Check parking brake

1.1.3.3 Check service brake

1.1.3.4 Check trailer brake

1.1.4 Inspect Air Brakes

1.1.4.1 Check low-pressure warning system

1.1.4.2 Check tractor protection valve

1.1.4.3 Check air pressure buildup

1.1.4.4 Check air pressure level

1.1.5 Inspect Load

1.1.5.1 Check cargo securing devices

1.1.5.2 Check cargo protection

1.1.5.3 Check vehicle overload

1.1.5.4 Check vehicle balance of weight

PRE-DRIVE INSPECTION

Goals

(1) determine vehicle condition

(2) determine condition of tires

(3) determine that area around vehicle is clear

(1) Check Exterior
of Vehicle

(2) Check Tires

(3) Check Exterior
of Vehicle

(4) Inspect
Air Brakes

(5) Inspect
Load and Protection

Hierarchical Task Description of Commercial Vehicles

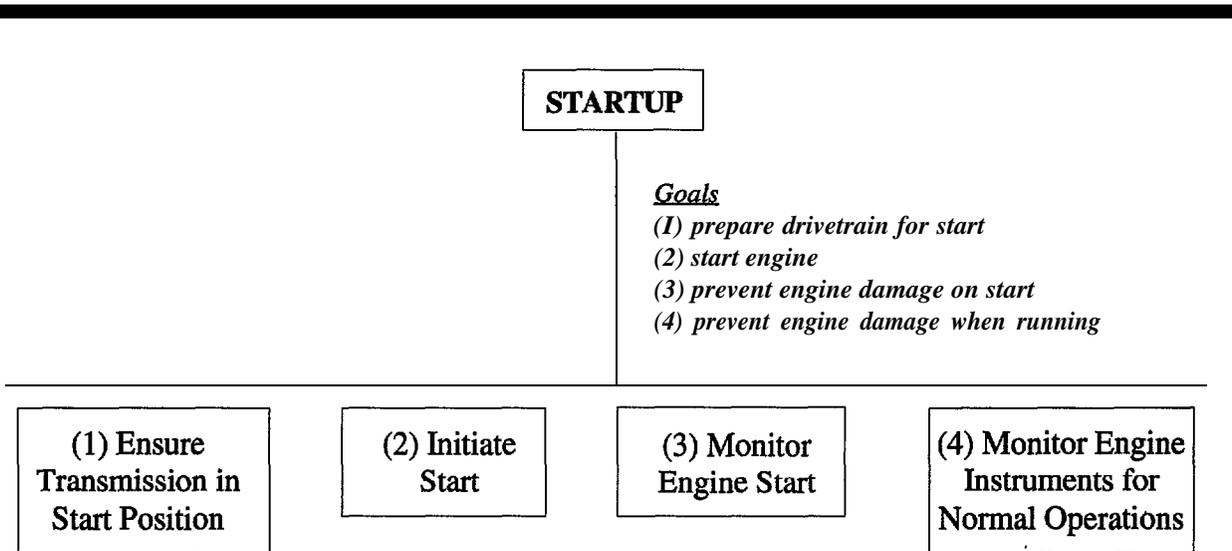
1.2 STARTUP

1.2.1 Ensure Transmission in Start Position

1.2.2 Initiate Start

1.2.3 Monitor Engine Start

1.2.4 Monitor Engine Instruments for Normal Operations



Hierarchical Task Description of Commercial Vehicles

1.3 AUXILIARY SYSTEMS

1.3.1 Climate Control

1.3.1.1 Set climate controls as necessary

1.3.2 Turn Signals

1.3.2.1 Check operations

1.3.3 Communications

1.3.3.1 Broadcast radio/entertainment system

1.3.3.1.1 Turn on

1.3.3.1.2 "Select mode, station, program"

1.3.3.2 Two-way communications

1.3.3.2.1 Turn on

1.3.4 ATIS Systems

1.3.4.1 Turn on

1.3.4.2 Verify system readiness

1.3.4.3 Initiate system operation

1.3.4.3.1 Input desired system parameters

1.3.4.3.2 Verify system parameters correct

1.3.5 Lighting

1.3.5.1 Turn on if necessary

1.3.6 Seats

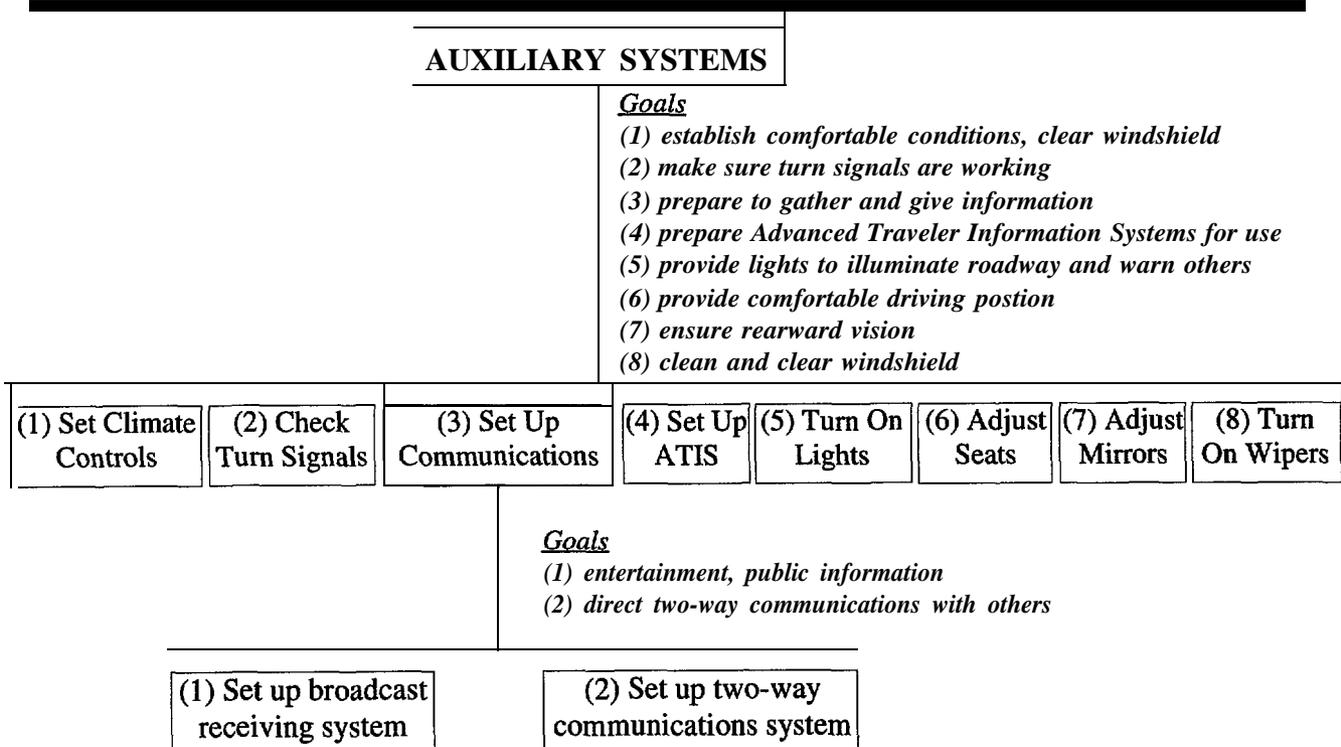
1.3.6.1 Adjust seat if necessary

1.3.7 Mirrors

1.3.7.1 Adjust mirrors if necessary

1.3.8 Wipers/Windshield Washer

1.3.8.1 Turn on wipers/windshield washer as necessary



Hierarchical Task Description of Commercial Vehicles

1.4 PLANNING

1.4.1 Destination Selection

1.4.1.1 Identify category of destination

1.4.1.2 Identify specific destination

1.4.2 Route Planning

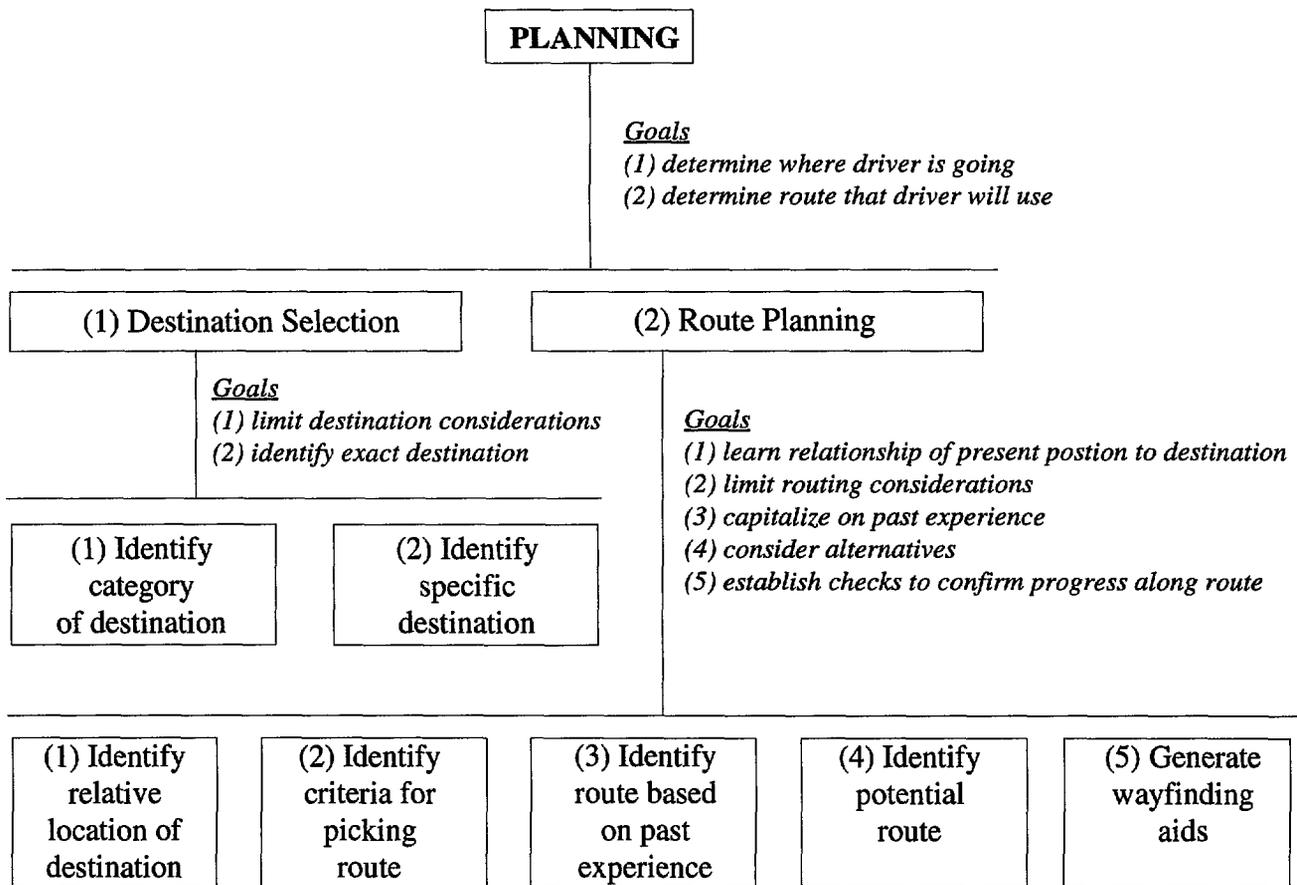
1.4.2.1 Identify relative location of destination

1.4.2.2 Identify criteria for picking route

1.4.2.3 Identify route based on past experience

1.4.2.4 Identify potential route

1.4.2.5 Generate wayfinding aids



Hierarchical Task Description of Commercial Vehicles

2.1 NAVIGATION AND ROUTING

2.1.1 Wayfinding

2.1.1.1 Navigation

2.1.1.1.1 Identify present location

2.1.1.1.2 Determine relative direction and distance to destination

2.1.1.1.3 Use landmarks to determine orientation and present location

2.1.1.1.4 Compare expected location to map reference points and expectations

2.1.1.2 Route following

2.1.1.2.1 Identify next waypoint

2.1.1.2.2 Identify present location relative to waypoint

2.1.1.2.3 Identify required maneuver to proceed beyond the waypoint

2.1.1.2.4 Execute maneuvers

2.1.1.2.5 Verify present location and direction against expectation

2.1.2 Route Modification

2.1.2.1 Identify need

2.1.2.1.1 Identify traffic conditions and hazard on projected route

2.1.2.1.2 Evaluate consequence of traffic condition and hazard

2.1.2.1.3 Identify discrepancy between planned and actual route

2.1.2.2 Select and change

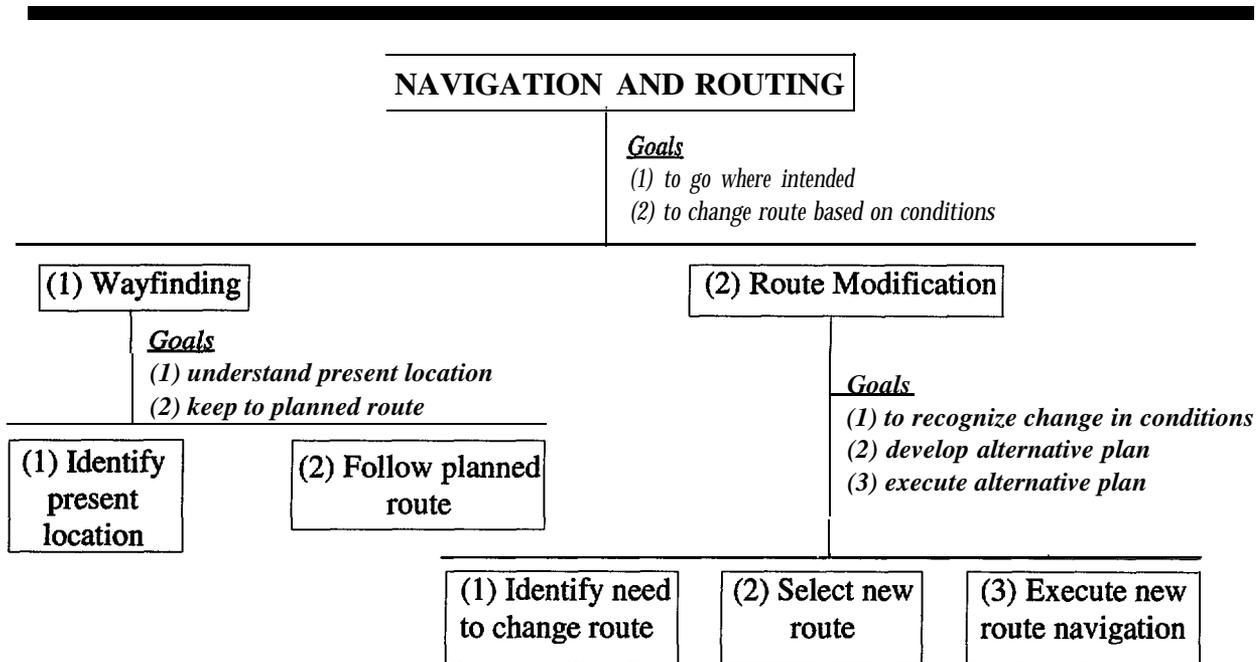
2.1.2.2.1 Determine position relative to traffic congestion or hazard

2.1.2.2.2 Identify alternate route

2.1.2.2.3 Determine distance to waypoint

2.1.2.2.4 Determine required maneuver

2.1.2.2.5 Verify present location and direction against expectation



Hierarchical Task Description of Commercial Vehicles

2.2 GUIDANCE AND MANEUVERS

2.2.1 Traffic Coordination

- 2.2.1.1 Monitor distance between own vehicle and others
- 2.2.1.2 Execute speed and position control to maintain separation
- 2.2.1.3 Monitor position of vehicle relative to traffic conditions and waypoint
- 2.2.1.4 Execute maneuvers to accommodate traffic conditions and vehicle dynamics

2.2.2 Rule Compliance

- 2.2.2.1 Monitor environment for regulatory signs
- 2.2.2.2 Recall from memory regulatory information
- 2.2.2.3 Evaluate planned route relative to regulatory requirements
- 2.2.2.4 Compare current driving status against regulatory requirements
- 2.2.2.5 Execute driving maneuvers to comply
- 2.2.2.6 Execute speed and position control to comply

2.2.3 Maneuvering

- 2.2.3.1 Identify present speed and position
- 2.2.3.2 Identify distance to waypoint
- 2.2.3.3 Identify traffic condition
- 2.2.3.4 Adjust speed and lane position
- 2.2.3.5 Signal intended maneuver
- 2.2.3.6 Execute desired maneuver

2.2.4 Hazard Observation

- 2.2.4.1 Estimate hazard potential on planned route
- 2.2.4.2 Make adjustment to planned route to accommodate hazard
- 2.2.4.3 Monitor roadway surface and surroundings
- 2.2.4.4 Monitor traffic conditions for hazardous situations
- 2.2.4.5 Estimate hazard potential to vehicle
- 2.2.4.6 Execute speed and position control to compensate for hazard
- 2.2.4.7 Execute driving maneuver to compensate for hazard

GUIDANCE AND MANEUVERS

Goals

- (1) keep vehicle at safe distance from other vehicles
- (2) keep vehicle within regulated safety limits
- (3) cause vehicle to go where intended
- (4) avoid hazardous conditions

(1) Coordinate Vehicle Movements With Other Traffic

(2) Keep Speed and Other Activities Within What Regulations Require

(3) Control Car Direction and Speed to Reach Intended Destination

(4) Observe and Take Necessary Actions to Avoid Hazardous Conditions

Hierarchical Task Description of Commercial Vehicles

2.3 CONTROL

2.3.1 Speed Control

2.3.1.1 Identify discrepancy between current and desired speed

2.3.1.2 Adjust throttle or brake to control speed

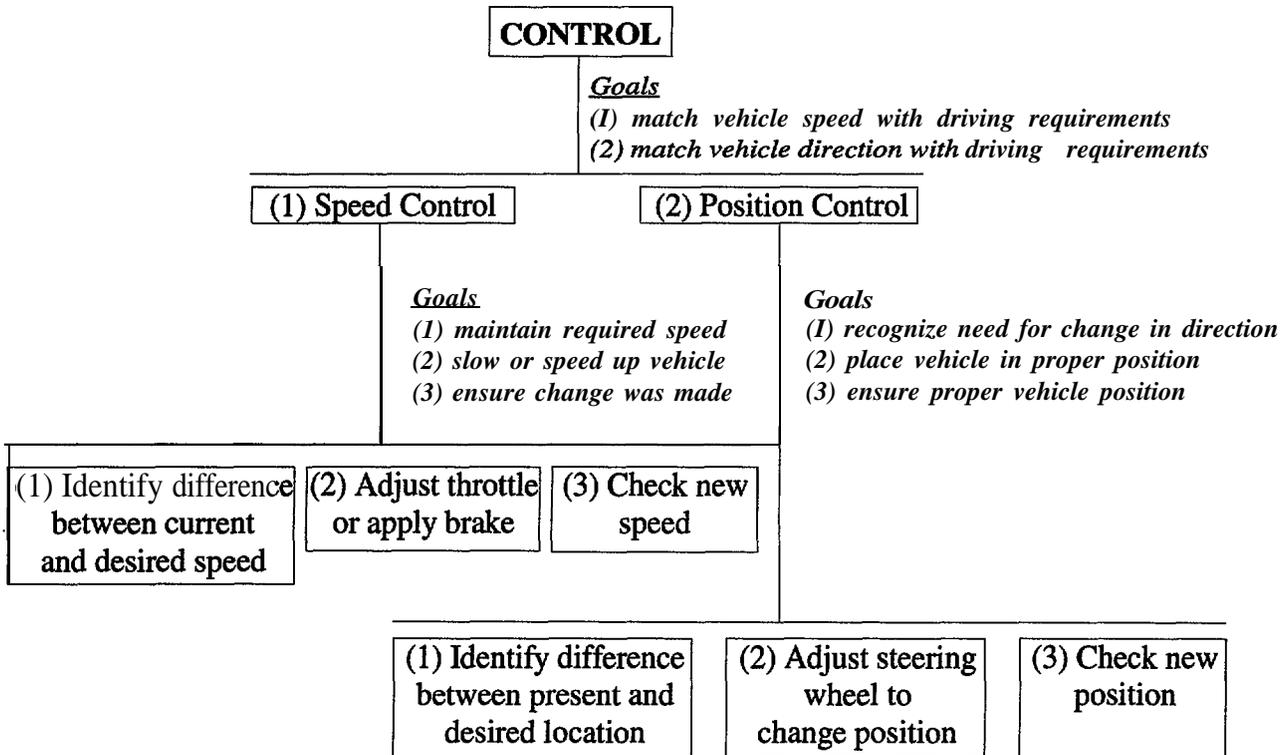
2.3.1.3 Verify adjustment of speed

2.3.2 Position Control

2.3.2.1 Identify discrepancy between current and desired lane positions

2.3.2.2 Adjust steering wheel to compensate

2.3.2.3 Verify adjustment of land position



Hierarchical Task Description of Commercial Vehicles

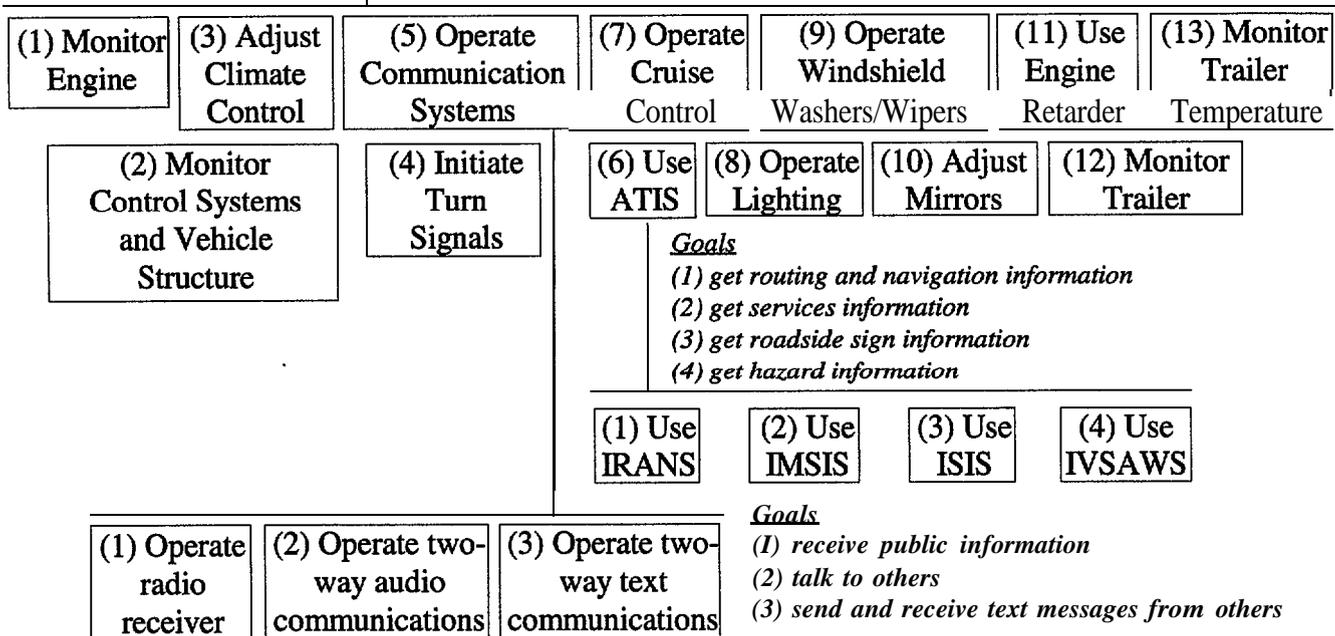
2.4 VEHICLE SYSTEM OPERATION AND MONITORING

- 2.4.1 Monitor Engine Operation
- 2.4.2 Monitor Control Systems and Vehicle Structure
- 2.4.3 Adjust Climate Control
- 2.4.4 Initiate Turn Signals
- 2.4.5 Operate Communications Systems
 - 2.4.5.1 Operate broadcast radio/entertainment system
 - 2.4.5.2 Operate two-way communications (audio)
 - 2.4.5.3 Operate two-way communications (text)
- 2.4.6 Use Advanced Traveler Information Systems (ATIS)
 - 2.4.6.1 Use In-Vehicle Routing and Navigation System (IRANS)
 - 2.4.6.2 Use In-Vehicle Motorist Services Information System (IMSIS)
 - 2.4.6.3 Use In-Vehicle Sign Information System (ISIS)
 - 2.4.6.4 Use In-Vehicle Safety Advisory and Warning System (IVSAWS)
- 2.4.7 Operate Cruise Control
- 2.4.8 Operate Lighting Systems
- 2.4.9 Operate Windshield Washers/Wipers
- 2.4.10 Adjust Rearview Mirror
- 2.4.11 User Engine Retarder and Compression Brakes
- 2.4.12 Monitor Trailer Tracking
- 2.4.13 Monitor Trailer Refrigeration

VEHICLE SYSTEM OPERATION AND MONITORING

Goals

- (1) ensure engine operating normally
- (2) ensure tires, brakes, steering, and vehicle structure are functioning normally
- (3) maintain comfortable interior and clear windshield
- (4) warn other drivers of turn intentions
- (5) obtain and give information to others
- (6) obtain and use traveler information
- (7) reduce driving fatigue by automatic maintaining of speed
- (8) illuminate the highway and improve visibility of vehicle to others
- (9) keep windshield clear
- (10) provide view of traffic behind without inducing glare



Hierarchical Task Description of Commercial Vehicles

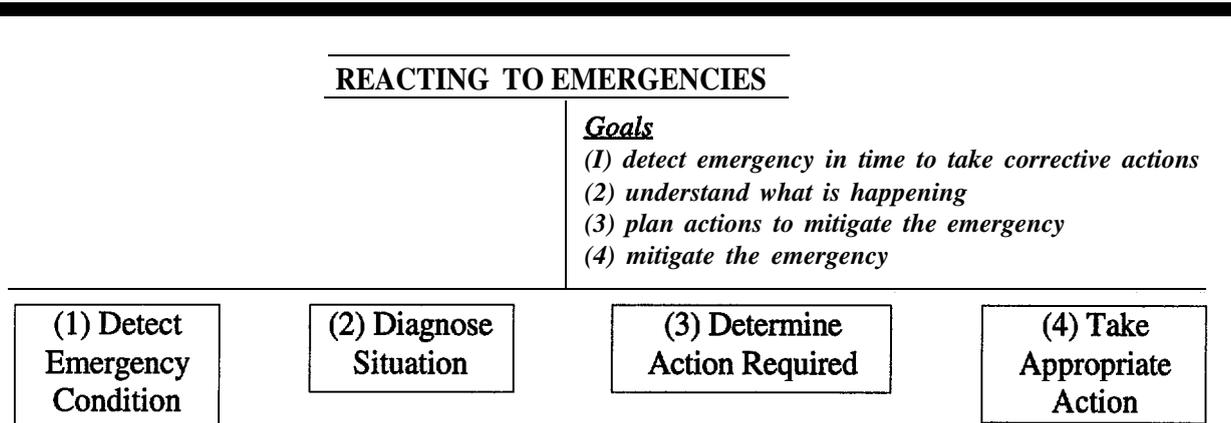
2.5 REACTING TO EMERGENCIES

2.5.1 Detect Emergency Condition

2.5.2 Diagnose Situation

2.5.3 Determine Action Required

2.5.4 Take Appropriate Action



Hierarchical Task Description of Commercial Vehicles

5.1 TRIP PLANNING

5.1.1 Gather Information

5.1.1.1 Destination and stopping points

5.1.1.2 Desired route parameters

5.1.2 Input Information

5.1.2.1 Destination(s)

5.1.2.1.1 Enter destination(s)

5.1.2.1.2 Verify destination(s) entry correct

5.1.2.2 Route parameters

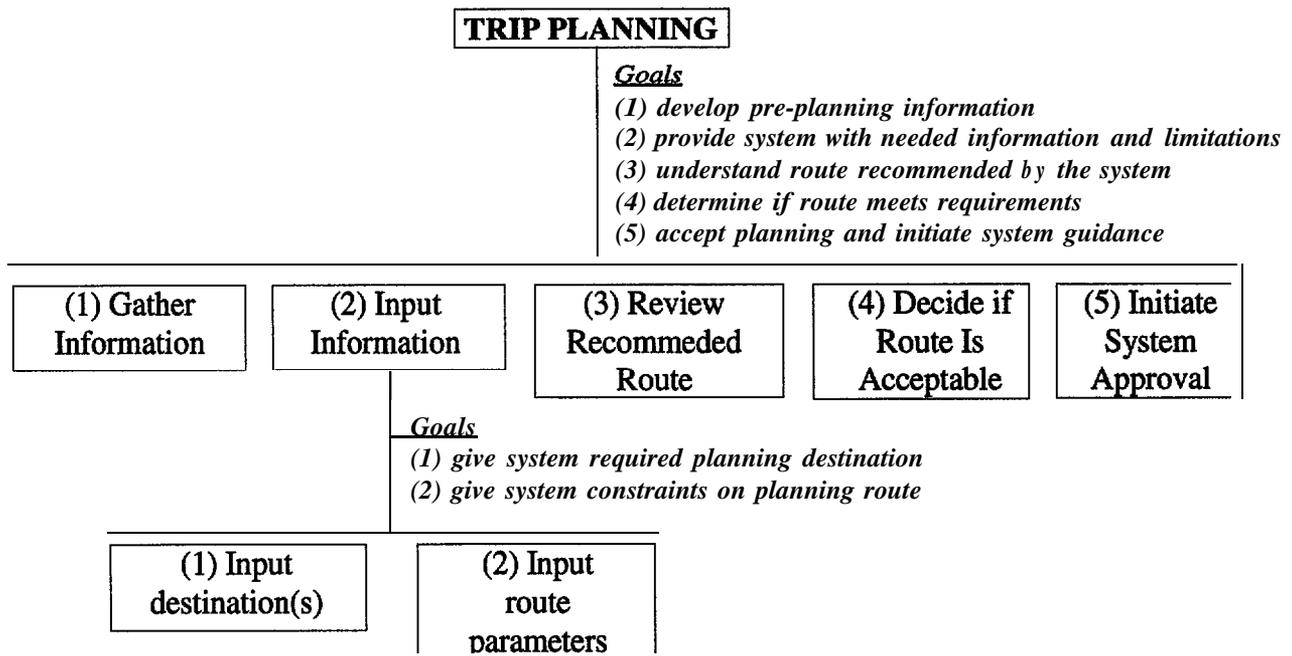
5.1.2.2.1 Enter route parameters

5.1.2.2.2 Verify route parameters correct

5.1.3 Review Recommended Route

5.1.4 Decide if Route Is Acceptable

5.1.5 Initiate System Approval



Hierarchical Task Description of Commercial Vehicles

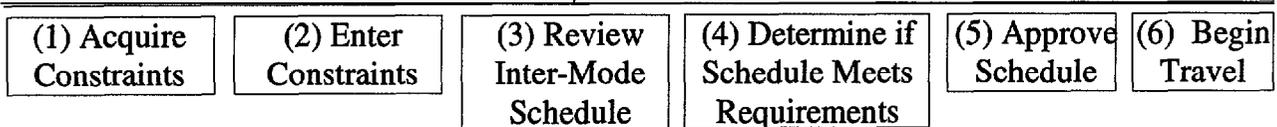
5.2 MULTI-MODE TRAVEL COORDINATION

- 5.2.1 Acquire Constraints
- 5.2.2 Enter Constraints
- 5.2.3 Review Inter-Mode Schedule
- 5.2.4 Determine if Inter-Mode Schedule Will Meet Requirements
- 5.2.5 Approve Inter-Mode Schedule
- 5.2.6 Begin First Mode Travel
 - 5.2.6.1 System update of arrival times
 - 5.2.6.1.1 Arrival time for current mode
 - 5.2.6.1.2 Arrival time for next mode
 - 5.2.6.2 System alerts of change in arrival time for next mode
 - 5.2.6.3 System computes change in destination arrival time
 - 5.2.6.4 System proposes new inter-mode schedule
 - 5.2.6.5 Determine if new inter-mode schedule will meet requirements
 - 5.2.6.5.1 If will meet requirements, accept schedule
 - 5.2.6.5.2 If will not meet requirements, request different routing

MULTI-MODE TRAVEL COORDINATION

Goals

- (1) *determine requirements for travel*
- (2) *provide system with requirements*
- (3) *understand suggested travel plans*
- (4) *decide if suggested travel plans will meet needs*
- (5) *initiate system coordination*
- (6) *begin trip*



Hierarchical Task Description of Commercial Vehicles

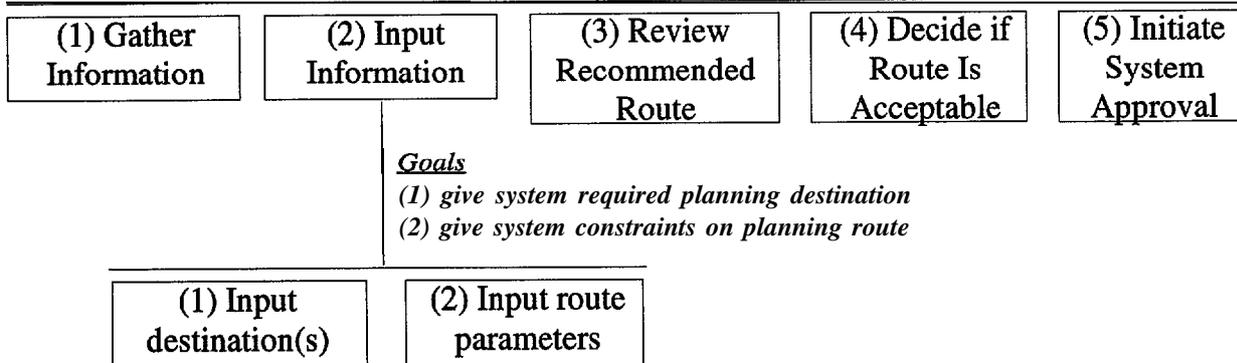
5.3 PRE-DRIVE ROUTE AND DESTINATION SELECTION

- 5.3.1 Gather Information
 - 5.3.1.1 Destination and stopping points
 - 5.3.1.2 Desired route parameters
- 5.3.2 Input Information
 - 5.3.2.1 Destination
 - 5.3.2.1.1 Enter destination
 - 5.3.2.1.2 Verify destination entry correct
 - 5.3.2.2 Route parameters
 - 5.3.2.2.1 Enter route parameters
 - 5.3.2.2.2 Verify route parameters correct
- 5.3.3 Review Recommended Route
- 5.3.4 Decide if Route Is Acceptable
- 5.3.5 Intitiate System Approval

PRE-DRIVE ROUTE AND DESTINATION SELECTION

Goals

- (1) develop pre-planning information
- (2) provide system with needed information and limitations
- (3) understand route recommended by the system
- (4) determine if route meets requirements
- (5) accept planning and initiate system guidance



Hierarchical Task Description of Commercial Vehicles

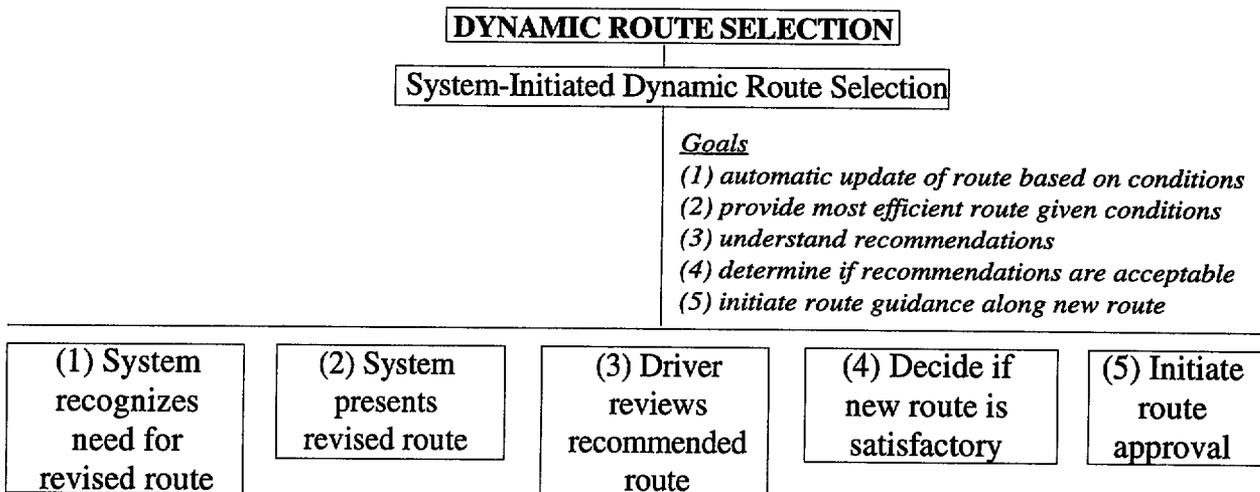
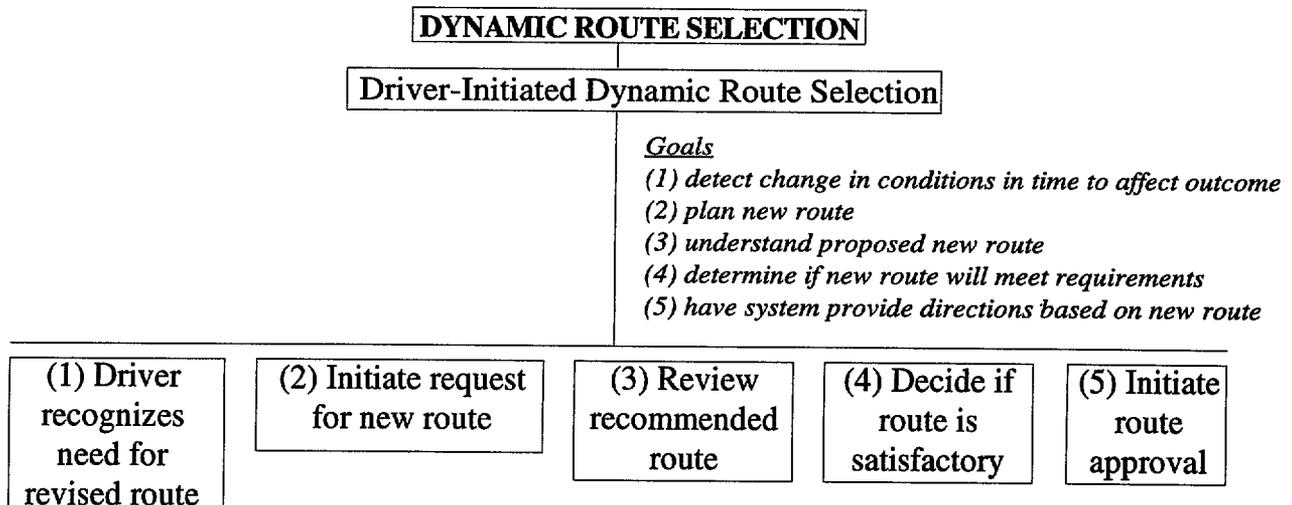
5.4 DYNAMIC ROUTE SELECTION

5.4.1 Driver-Initiated Dynamic Route Selection

- 5.4.1.1 Driver recognizes need for revised route
- 5.4.1.2 Initiate new route request of IRANS
- 5.4.1.3 System computes new route
- 5.4.1.4 System presents revised route
- 5.4.1.5 Driver reviews recommended route
- 5.4.1.6 Decide if recommended route is satisfactory
- 5.4.1.7 Initiate route approval

5.4.2 System-Initiated Dynamic Route Selection

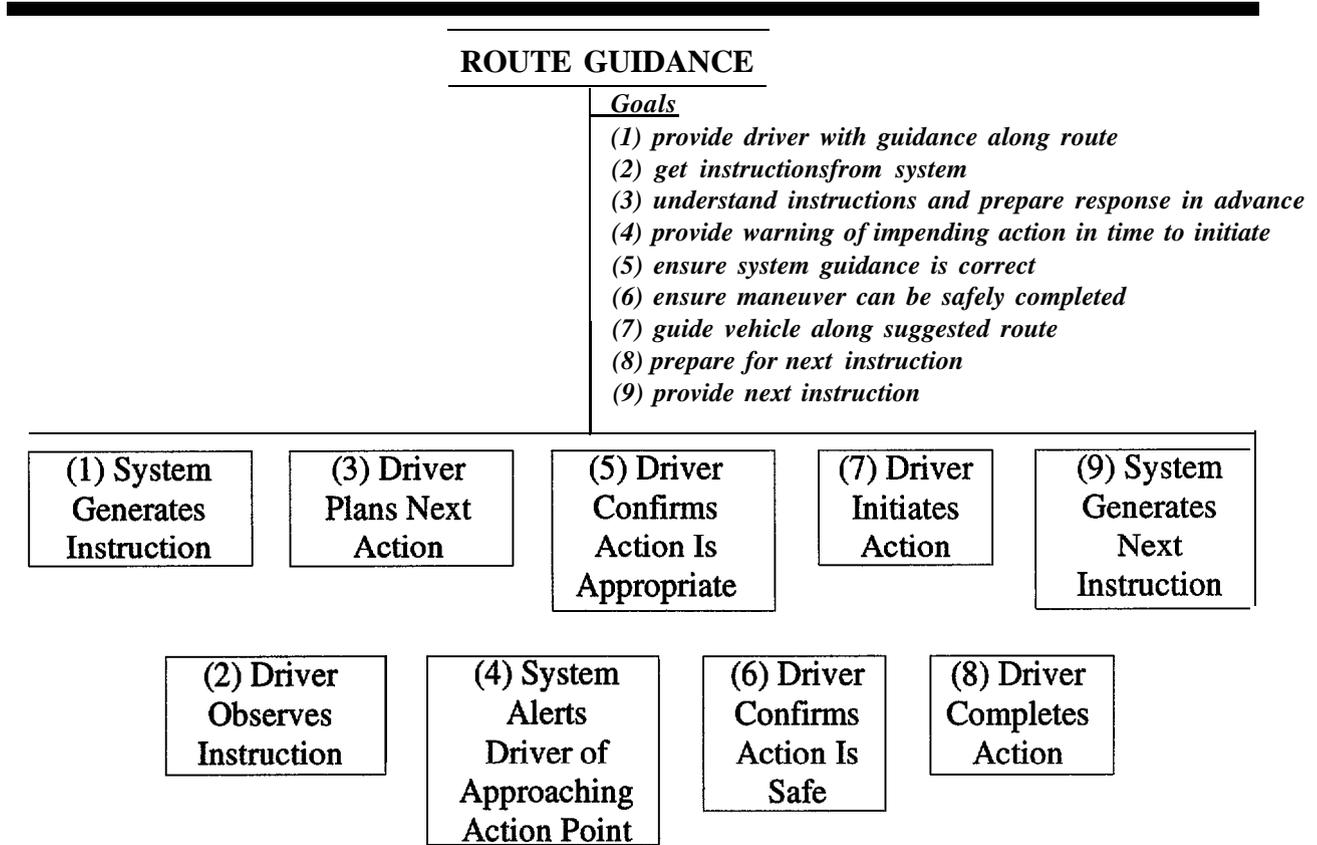
- 5.4.2.1 System recognizes need for revised route
- 5.4.2.2 System alerts driver of change in route condition
- 5.4.2.3 System computes revised route
- 5.4.2.4 System presents revised route
- 5.4.2.5 Driver reviews recommended route
- 5.4.2.6 Decide if recommended route is satisfactory
- 5.4.2.7 Initiate route approval



Hierarchical Task Description of Commercial Vehicles

5.5 ROUTE GUIDANCE

- 5.5.1 System Generates Instruction
- 5.5.2 Driver Observes Instruction for Next Action
- 5.5.3 Driver Plans for Next Route Action
- 5.5.4 System Alerts Driver of Approaching Action Point
- 5.5.5 Driver Confirms Action Is Appropriate
- 5.5.6 Driver Confirms That Action Is Safe
- 5.5.7 Driver Initiates Necessary Action
- 5.5.8 Driver Completes Necessary Action
- 5.5.9 System Generates Next Instruction



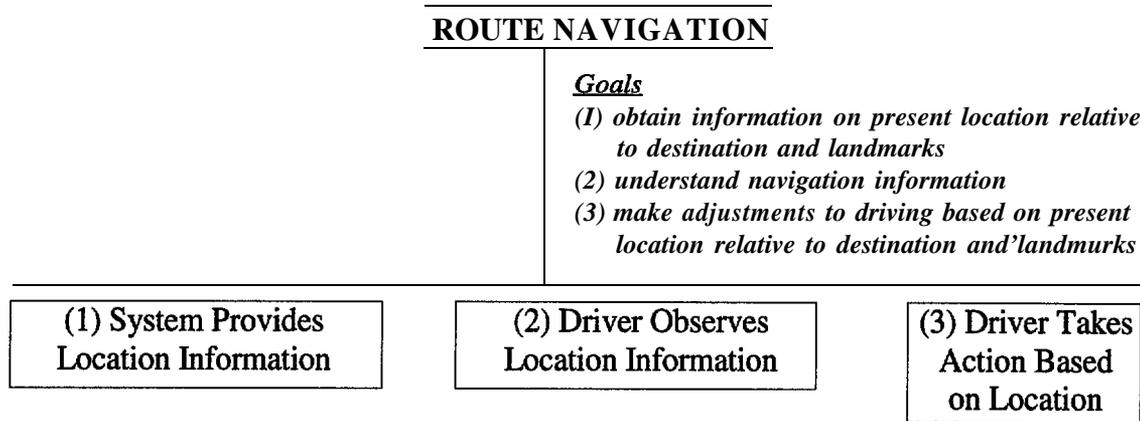
Hierarchical Task Description of Commercial Vehicles

5.6 ROUTE NAVIGATION

5.6.1 System Provides Navigation Information

5.6.2 Driver Observes Navigation Information

5.6.3 Driver Takes Action Based on Navigation Information



Hierarchical Task Description of Commercial Vehicles

5.7 AUTOMATED TOLL COLLECTION

- 5.7.1 Vehicle Approaches Toll Area
- 5.7.2 System Queries Vehicle for Toll Tag or AVI
- 5.7.3 System Identifies Vehicle
- 5.7.4 System Initiates Automatic Billing or Deducts Toll
- 5.7.5 System Determines if Toll Payment Is Appropriate
 - 5.7.5.1 If yes, indicate to driver that he/she is free to continue
 - 5.7.5.2 If no, indicate driver must stop at toll booth

AUTOMATED TOLL COLLECTION

Goals

- (1) activate automatic toll collection*
- (2) activate toll tag or identification transponder*
- (3) obtain vehicle identification number*
- (4) query toll records to determine payment*
- (5) ensure account is active and working*
- (6) provide driver with either "go ahead" or "pay toll" instructions*

(1) Vehicle Approaches Toll Area

(2) System Queries Vehicle for Toll Tag or AVI

(3) System Identifies Vehicle

(4) System Initiates Automatic Billing

(5) System Determines if Toll Payment Is Appropriate

(6) System Provides Directions to Driver

Hierarchical Task Description of Commercial Vehicles

6.1 BROADCAST SERVICES/ATTRACTIONS

- 6.1.1 Driver Initiates Broadcast Services Receiving Equipment
- 6.1.2 Driver Enters Screening Parameters
 - 6.1.2.1 Services of interest
 - 6.1.2.2 Proximity to route or area of interest
- 6.1.3 System Provides Announcement of Services as Approached
- 6.1.4 Driver Takes Desired Action Regarding Services

BROADCAST SERVICES/ATTRACTIONS

Goals

- (1) prepare equipment to receive broadcast services*
- (2) Limit alert messages by type and proximity*
- (3) provide information desired*
- (4) use information*

(1) Initiate Broadcast
Services Receiving
Equipment

(2) Enter Screening
Parameters

(3) Receive
Announcement
of Services

(4) Take Desired
Action

Hierarchical Task Description of Commercial Vehicles

6.2 SERVICES/ATTRACTIONS DIRECTORY

- 6.2.1 Driver Initiates Services/Attractions Directory
- 6.2.2 Select Class of Services Desired
- 6.2.3 Select Parameters for Class of Services
- 6.2.4 Review Listing
- 6.2.5 Select Item From Listing
- 6.2.6 Initiate Route Guidance to Selected Item

SERVICES/ATTRACTIONS DIRECTORY

Goals

- (1) prepare system to provide services/attractions listing*
- (2) reduce search to specific type of services/attractions wanted*
- (3) limit search to specific area, distance, or other characteristic*
- (4) review possible selections*
- (5) determine specific location of desired services/attractions*
- (6) obtain directions to services/attractions*

(1) Initiate
Services/
Attractions
Directory

(2) Select
Class of
Services
Desired

(3) Select
Parameters
for Class
of Services

(4) Review
Listing

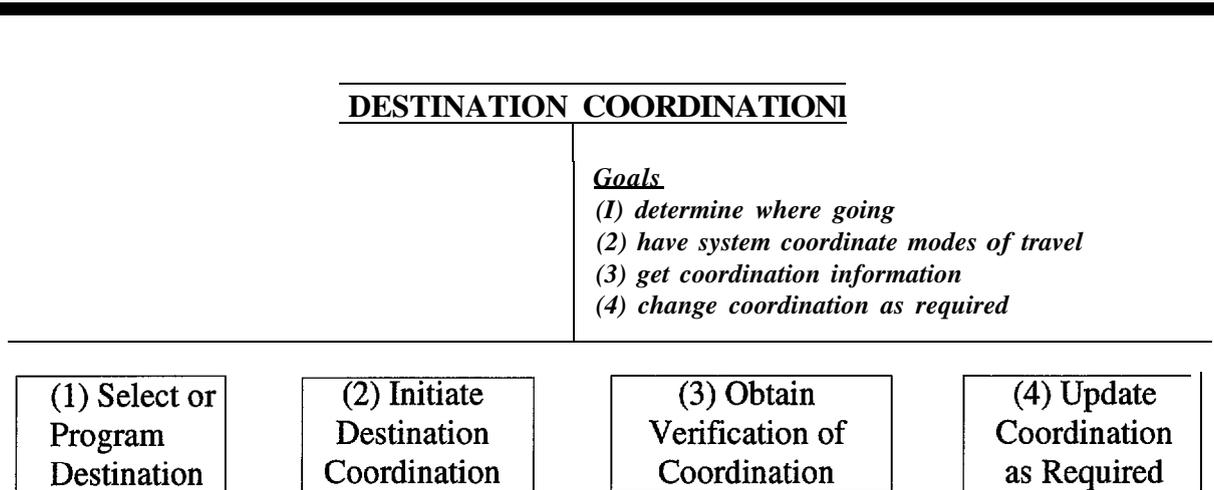
(5) Select Item
From Listing

(6) Initiate
Route
Guidance

Hierarchical Task Description of Commercial Vehicles

6.3 DESTINATION COORDINATION

- 6.3.1 Select or Program Destination
- 6.3.2 Initiate Destination Coordination
- 6.3.3 Obtain Verification of Coordination
- 6.3.4 Update Coordination as Required
 - 6.3.4.1 System update of arrival time
 - 6.3.4.2 Driver updates changes in services required



Hierarchical Task Description of Commercial Vehicles

6.4 MESSAGE TRANSFER

6.4.1 Message Sent From Vehicle

6.4.1.1 Driver generates message

6.4.1.1.1 Preset message using menu or programmed keys

6.4.1.1.2 Text message generated by keyboard or other device

6.4.1.2 Driver initiates message transfer

6.4.1.3 System indicates message delivery and receipt

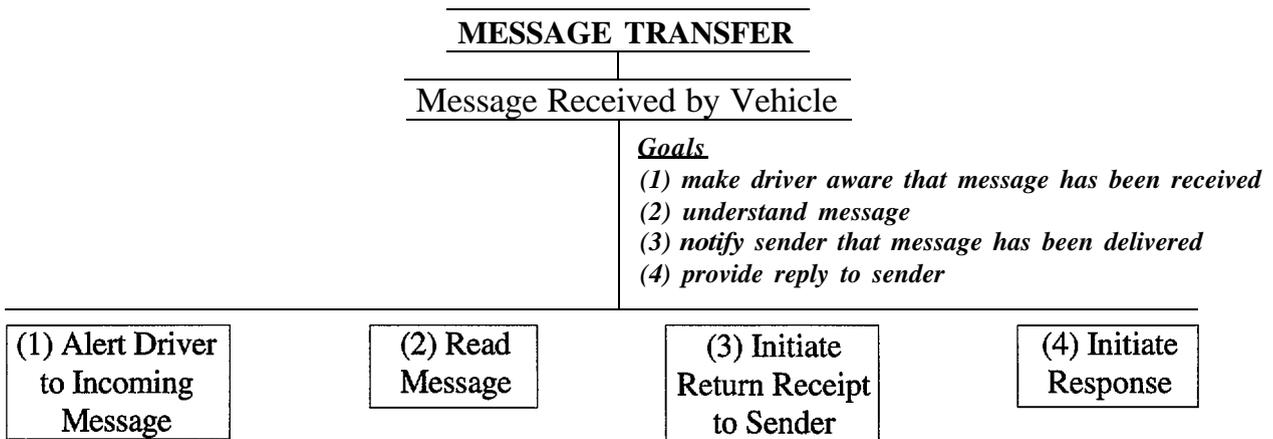
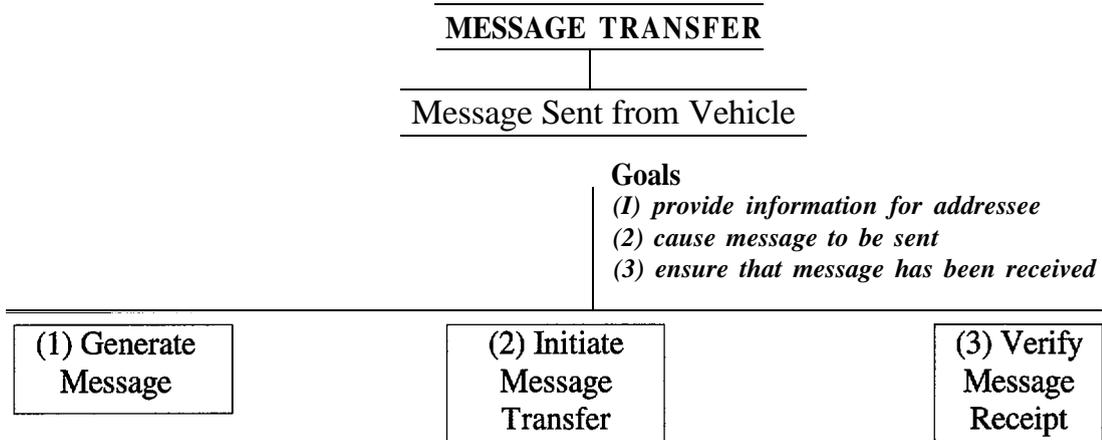
6.4.2 Message Received by Vehicle

6.4.2.1 System alerts driver to receipt of message

6.4.2.2 Driver reads message

6.4.2.3 System notifies sender that message has been received

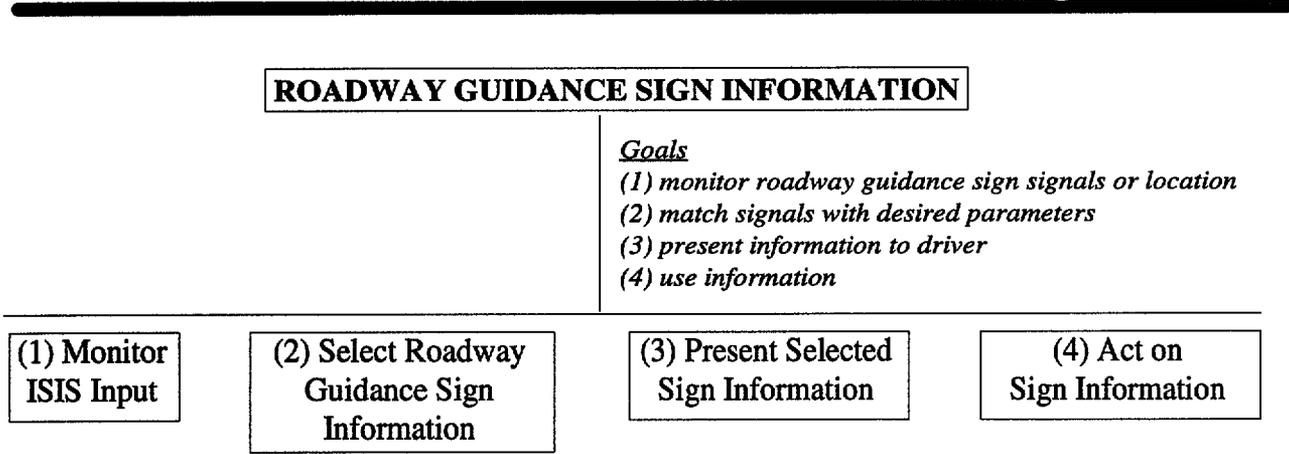
6.4.2.4 Driver initiates response if necessary



Hierarchical Task Description of Commercial Vehicles

7.1 ROADWAY GUIDANCE SIGN INFORMATION

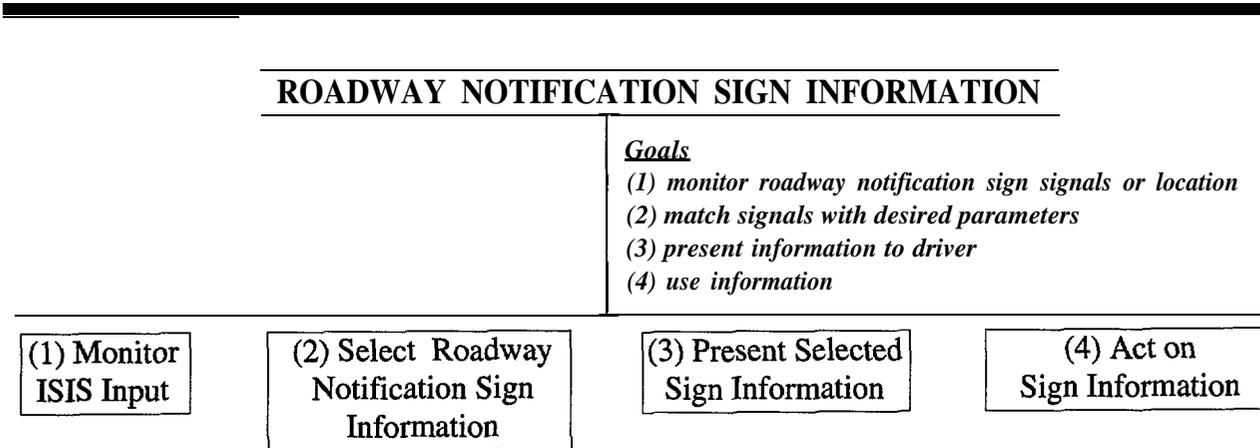
- 7.1.1 System Monitors ISIS Input
- 7.1.2 Select Roadway Guidance Sign Information
- 7.1.3 System Presents Selected Sign Information
- 7.1.4 Driver Acts on Sign Information as Desired



Hierarchical Task Description of Commercial Vehicles

7.2 ROADWAY NOTIFICATION SIGN INFORMATION

- 7.2.1 System Monitors ISIS Input
- 7.2.2 Select Roadway Notification Sign Information
- 7.2.3 System Presents Selected Sign Information
- 7.2.4 Driver Acts on Sign Information as Desired



Hierarchical Task Description of Commercial Vehicles

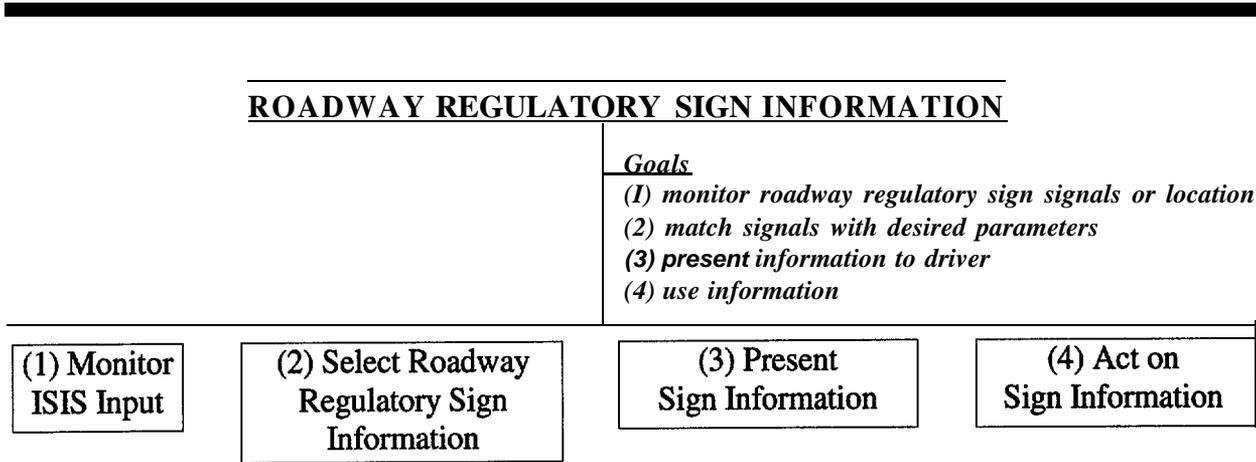
7.3 ROADWAY REGULATORY SIGN INFORMATION

7.3.1 System Monitors Input

7.3.2 Select Roadway Regulatory Sign Information

7.3.3 System Presents Selected Sign Information

7.3.4 Driver Acts on Sign Information as Desired



Hierarchical Task Description of Commercial Vehicles

7.4 ROAD RESTRICTION INFORMATION

- 7.4.1 System Monitors CVO Regulatory Information
- 7.4.2 System Selects CVO Regulatory Information
- 7.4.3 System Presents CVO Regulatory Information
- 7.4.4 Driver Acts on CVO Regulatory Information as Desired

BROADWAY REDUCTION INFORMATION

Goals

- (1) monitor CVO regulatory information or location*
- (2) match signals with desired parameters*
- (3) present information to driver*
- (4) use information*

**(1) Monitor
ISIS Inputs**

**(2) Select CVO
Regulatory
Information**

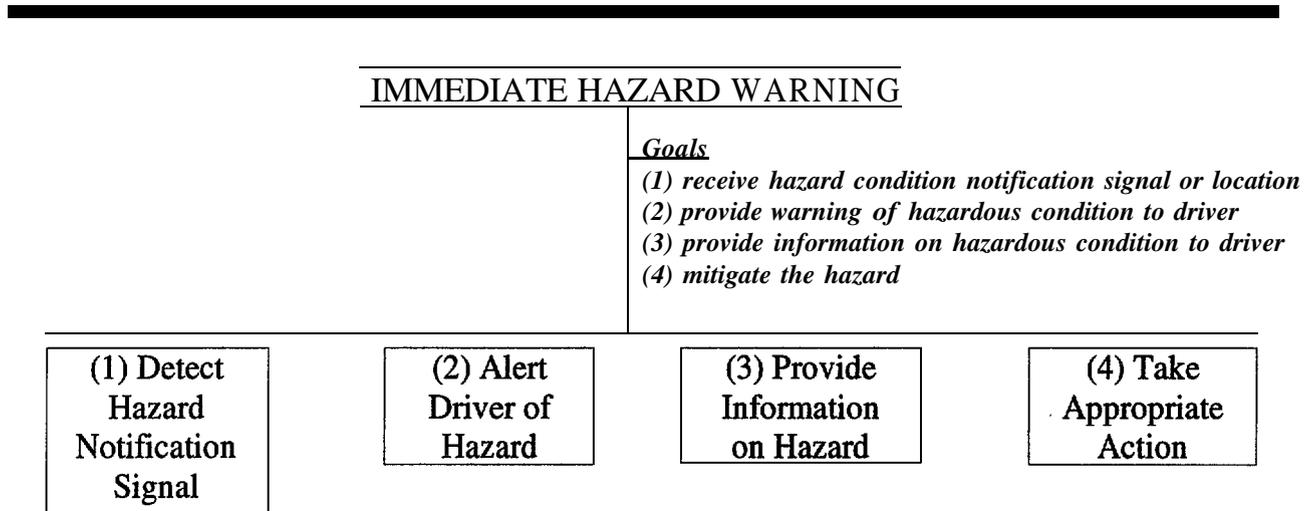
**(3) Present CVO
Regulatory
Information**

**(4) Act on CVO
Regulatory
Information**

Hierarchical Task Description of Commercial Vehicles

8.1 IMMEDIATE HAZARD WARNING

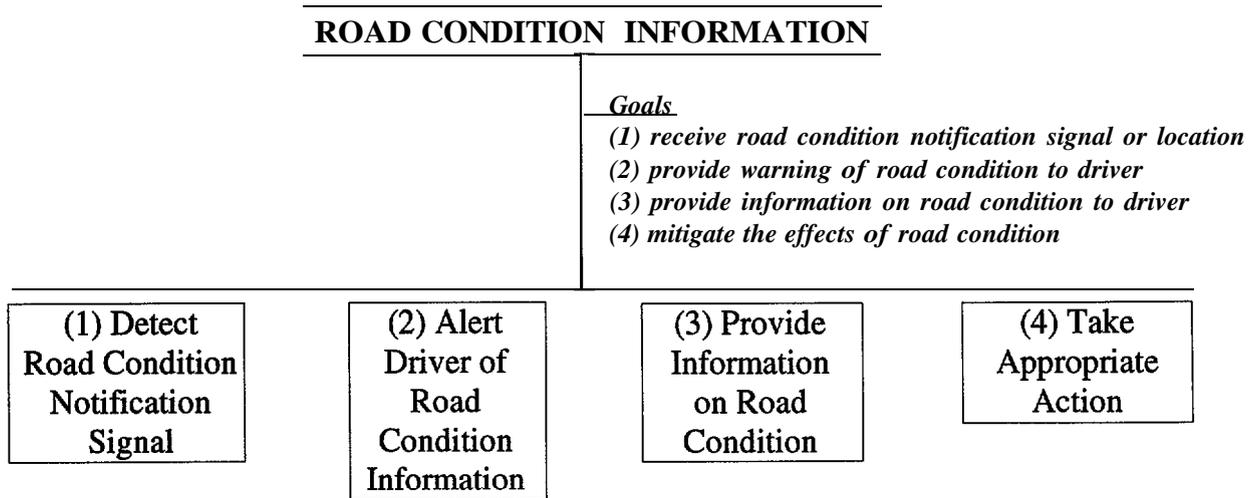
- 8.1.1 System Detects Hazard Notification
- 8.1.2 System Alerts Driver of Hazard
- 8.1.3 System Provides Information on Hazard Type
- 8.1.4 Driver Takes Appropriate Action in Response to Hazard



Hierarchical Task Description of Commercial Vehicles

8.2 ROAD CONDITION INFORMATION

- 8.2.1 System Detects Road Condition Notification
- 8.2.2 System Alerts Driver of Road Condition Notification
- 8.2.3 System Provides Information on Road Condition
- 8.2.4 Driver Takes Appropriate Action in Response to Road Condition

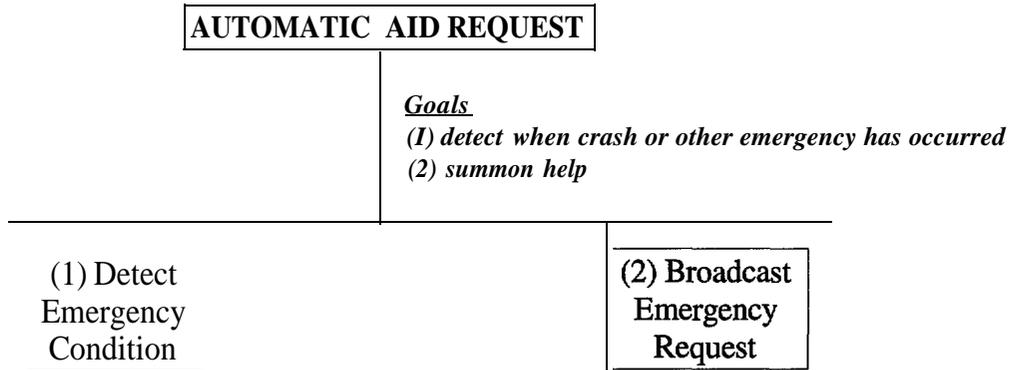


Hierarchical Task Description of Commercial Vehicles

8.3 AUTOMATIC AID REQUEST

8.3.1 System Detects Emergency Condition

8.3.2 System Broadcasts Emergency Request



Hierarchical Task Description of Commercial Vehicles

8.4 MANUAL AID REQUEST

- 8.4.1 Driver Activates Manual Aid Request
 - 8.4.1.1 Aid required
 - 8.4.1.2 Urgency
- 8.4.2 System Sends Request As Well As Vehicle Location
- 8.4.3 System Acknowledges Request Received
- 8.4.4 System Gets Update of Arrival Time for Aid
- 8.4.5 Notifies Driver of Arrival Time for Aid

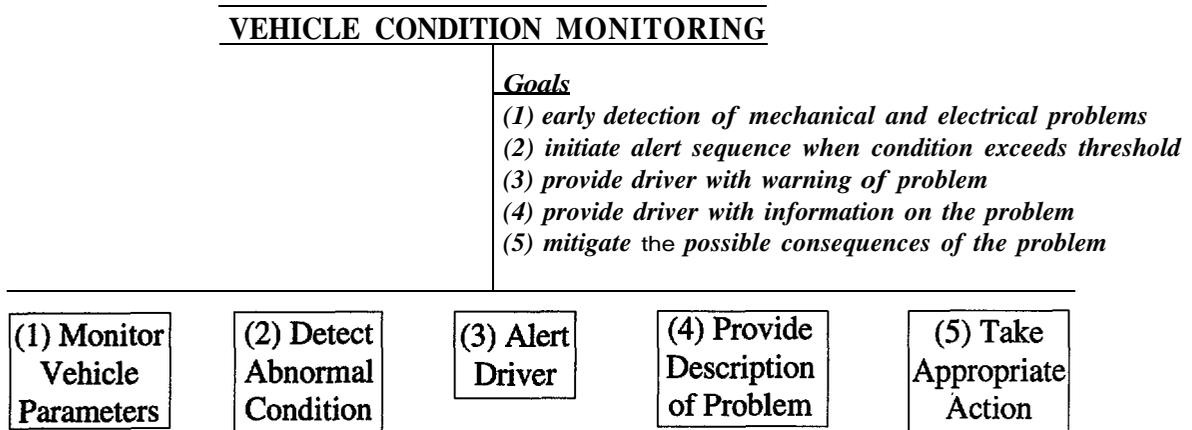
MANUAL AID REQUEST	
	<p><u>Goals</u></p> <ul style="list-style-type: none">(1) <i>activate system to request aid</i>(2) <i>provide vehicle location</i>(3) <i>provide feedback to driver that message has been received</i>(4) <i>obtain information on arrival time for aid</i>(5) <i>provide driver with information on arrival time</i>

(1) Initiate Manual Aid Request	(2) Send Request and Vehicle Location	(3) Acknowledge Request Received	(4) Receive Update of Arrival Time for Aid	(5) Notifies Driver of Arrival Time for Aid
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Hierarchical Task Description of Commercial Vehicles

8.5 VEHICLE CONDITION MONITORING

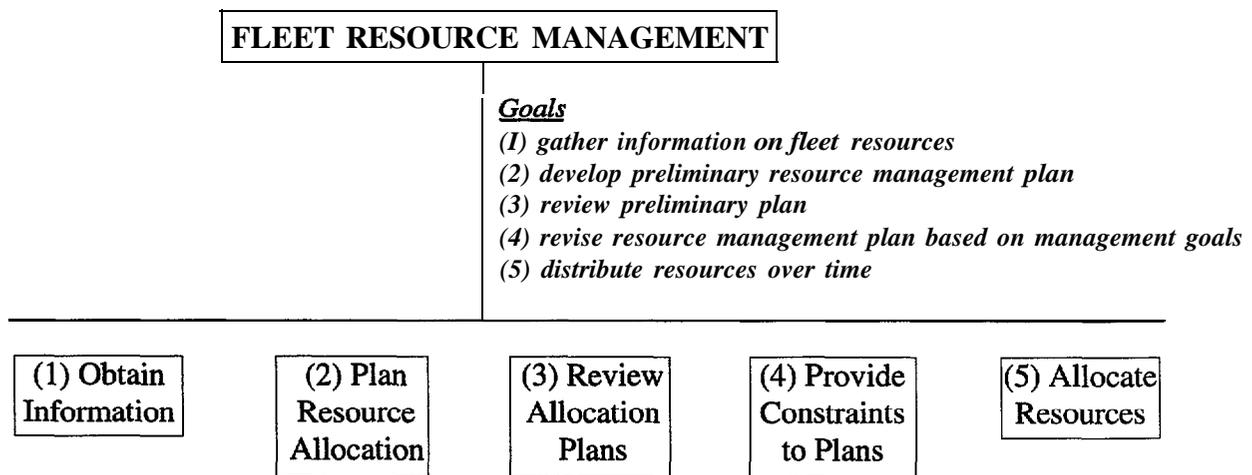
- 8.5.1 System Monitors Vehicle Parameters
- 8.5.2 System Detects Abnormal Condition
- 8.5.3 System Alerts Driver
- 8.5.4 System Provides Description of Problem
- 8.5.5 Driver Takes Appropriate Action



Hierarchical Task Description of Commercial Vehicles

9.1 FLEET RESOURCE MANAGEMENT

- 9.1.1 System Polls Information On the Fleet
- 9.1.2 System Plans Resource Allocation
- 9.1.3 Manager Reviews Resource Allocation Plans
- 9.1.4 Manager Provides Constraints to Allocation
- 9.1.5 Allocation Plan Developed



Hierarchical Task Description of Commercial Vehicles

9.2 DISPATCH

9.2.1 Planning

- 9.2.1.1 Gather information on resource requirements
- 9.2.1.2 Gather information on resource availability
- 9.2.1.3 Match resources to needs

9.2.2 Scheduling

- 9.2.2.1 Schedule shipment pickup and delivery
- 9.2.2.2 Schedule route

9.2.3 Coordinating

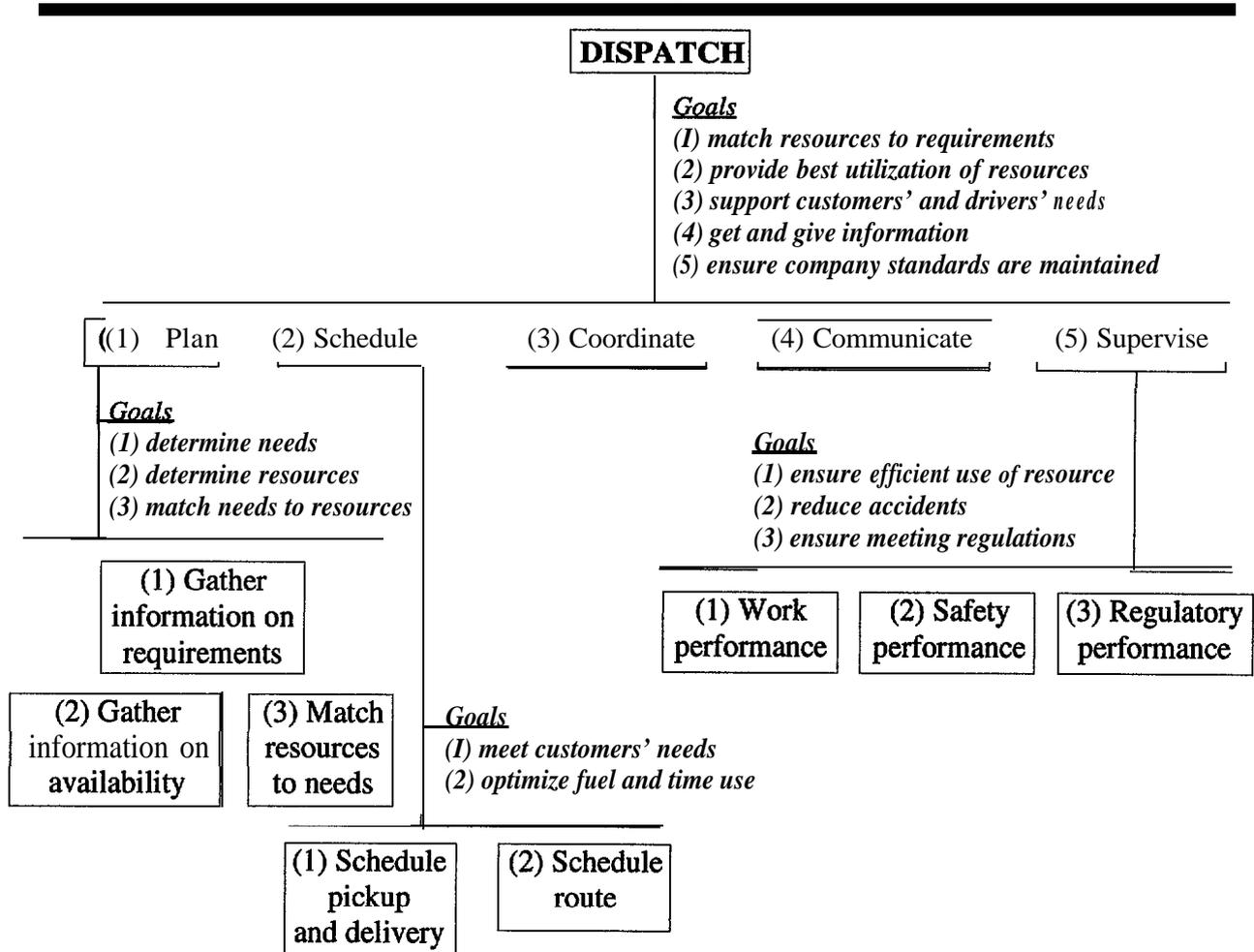
- 9.2.3.1 Coordinate drivers' activities
- 9.2.3.2 Coordinate shipments with customers

9.2.4 Communicating

- 9.2.4.1 Communicating with drivers on the road
- 9.2.4.2 Communicating with customers

9.2.5 Supervising

- 9.2.5.1 Driver work performance
- 9.2.5.2 Driver safety performance
- 9.2.5.3 Driver regulatory performance



Hierarchical Task Description of Commercial Vehicles

9.3 REGULATORY ENFORCEMENT

- 9.3.1 Enforcement of Permit Requirements
- 9.3.2 Enforcement of Weight Limitations
- 9.3.3 Enforcement of Vehicle Condition Requirements
- 9.3.4 Enforcement of Hours of Service Regulations

