1. Input file:
   1. Use a csv file to store all data needed for each test case (bag) with each column indicating the corresponding field of telegrams for a specific telegram-node.
   2. Use an xml file to define how to analyze the above csv file.
   3. The xml file should indicate which fields are key decided-field (the key node is defined in <Layout> by <DependNode>), which are used to decide the direction of VSU. This decided field is unique in a telegram-node.
   4. The input xml file can also indicate which fields are “location” type so that the program can translate the real location name into locations id;
2. The <node> in <Layout>
   1. In <Layout> part of the CFG\_HLCTester.xml, each node is a telegram node, which means only the location where some telegram will be sent can be used as node.
   2. ~~The name of node should use the real location in database,~~ now the map relationship of nodename and real location is defined in < Telegram>, see 3.a
   3. Use “direction” as an attribute for each NextNode XmlElement. Use both the values of < DependNode> and attribute “direction” to decide which is the real next node for bag moving.
   4. Add a <DelayTime> into <Node> to indicate the waiting time before sending telegram. So the program should create a new thread to send a telegram. This is useful for ICR.
3. The <Location> in <Telegram> for each node type
   1. Change the <Location> into <LocationList> which includes two XmlNode <Nodename> and <Location>. So the program can find the location value for telegram by mapping the node name to location.
   2. Then use this way, the new GID generating problem can also be resolved.
   3. Use this way, the program can also decide which telegram can be sent by the NodeName-Location map. Only the telegram its <LocationList> contains this node name can be sent.
4. The multiple location where new GID should be generated
   1. See 3.b
5. VSU direction
   1. Use a hashtable to store all the values of key nodes and deciding fields to map the key nodes to real direction.
   2. The value of the deciding fields should be matched with the value of attribute “direction” in <NextNode> XmlNode in <Layout> part.
   3. Because IRD are also used to do the sortation, so the IRD result received from SAC should be inserted into above hashtable
6. The IRD for sortation
   1. See 5.c
   2. If the hashtable does not have the IRD item, then insert the new IRD into it, otherwise update the Value of IRD item with the newest IRD received from SAC
7. StatusList
   1. Add <StatusList> for each telegram to map the test case value to direction value (used in VSU type);
8. Item Sortation Event Node
   1. The entire layout can be inserted into an ISE node. And whether this ISE will be sent or not can be decided by <LocationList>
   2. Add ILT and ISE telegram for VSU type
   3. ISE rate and ILT rate should be set for VSU type
9. Item Lost node
   1. The entire layout can be inserted into an Item-lost node. And whether this ITL will be sent or not can be decided by <LocationList>
10. ISE and 1500P data from other telegram
    1. That’s a problem
11. The VSU and IPR. The NextNode is not the proceed location
    1. Add a tag <ProceedList> into IPR telegram for VSU type with a key-value pair <NodeName> (for next node) and <ProceedLoc>
12. Only one EDS line can be configured in Layout, because the VSU is not
13. Some IPRs are only sent for one specific direction, not both.
    1. Add an attribute “IsSend” for each <NextNode> tag to indicate whether the current node will send telegram before going to next node;
    2. The telegram is constructed and sent after the < NextNode > is read by program and decide whether send or not according to “IsSend”;
    3. If the “IsSend” is not given for a < NextNode >, then the telegram will be sent by default
14. The ILT after depending node and before VSU
    1. The bags are moved according to the layout defined by xml from one node to next node. Used a variable “RcntDpndNode” to indicate the lasted depending node in depending hashtable
    2. If the bag move to a new depending node, then set “RcntDpndNode” to this new node
    3. If the ILT happened, then reset the value of hashtable to be “Lost” for “RcntDpndNode”
    4. If IRD is received, after added or updated depending hashtable, set “RcntDpndNode” to be IRD
    5. If the value of depending node is not available, IPR should direct the bag to security line. So add a new <NextNode> with “Direction” to be “Lost” for VSU type;