1- Organization

WestJet is a Canadian commercial airline that began as a more affordable alternative to major airlines when travelling in Canada or the United States of America. As such, WestJet must ensure satisfactory experience for guests to remain competitive and must guarantee safe, on-time flights. In addition, a guest’s baggage must be handled with care to arrive at the same destination at the same time as it’s owner. As a result, an accurate tracking of each bag is necessary when trying to navigate the many safety and security policies in the aviation industry. Thus, the implementation of a baggage database will greatly alleviate the pressure on staff and the worry of guests when travelling with WestJet.

The majority of Westjet’s operation is split into two main functional departments; above wing and below wing. A guest’s experience when flying Westjet will begin with an above the wing agent, more specifically a passenger service agent, that will check-in the guest and assist the preparation of bag tags for their luggage. During this process a passenger service agent is responsible for confirming guest reservation (PNR) and that guest’s luggage adheres to all regulations, some to determine cost while others are for general safety. Afterwards the luggage is placed on a connection belt to be later received by a below the wing agent, specifically a ramp agent.

A ramp agent is responsible for the sorting and handling of all baggage between the moment the guest places it onto the belt system, to when it is later picked up by that guest at their final destination. For efficient loading and offloading of aircraft, bags are typically given common descriptors for their load, connection and offload statuses to group together in the cargo holds, such as “local”, “connex”, “US-connex” or “priority bag”. Some of the descriptors are provided for safe handling, such as animal transportation (AVIH), while others are for a purely logistical benefit and help a ramp crew chief organize how best to offload incoming arrivals. Ramp agents need a thorough and efficient order of operations to reduce the risk of delays, lost baggage and the potential of incidents or accidents.

At first, a ramp agent will separate all incoming baggage based on their departing flight and then sort them based on what type of load status they fall under. After ensuring all bags for a flight have been received the ramp agent will bring them to the gate of the assigned flight’s departing aircraft to be loaded. Next, a flight manifest or loading instructions will be provided to the flight’s ramp crew chief from an above wing operations agent that determines what type and how many of each bag is loaded in each cargo hold to ensure safe weight distribution. At the end of the loading process a ramp crew chief must ensure that all bags are accounted for and that each cargo hold matches what is required from the loading instructions.

During this time, passenger service agents will board guests on the flight by confirming their boarding pass and issuing any new boarding passes for inbound guests and may provide new instruction to ramp crew chiefs based on changing circumstances. For example, if the overhead compartments of the fuselage are all full and “carry-on” luggage are unable to fit, they will load them in the cargo hold as a “gate-checked” bag. Some other exceptional scenarios may be; stand-by bags being accepted on the flight, rush bags needing to arrive as quickly as possible to the flight’s destination, and offloading of bags of guests who are deemed to be missing their flight. After confirmation, the loading will be considered final and that flight will depart and ramp agents at its destination will to prepare the offload procedure.

At this point, the operations agent will provide the crew chief with a flight manifest that summarizes how the flight was loaded. Hopefully, the flight is loaded in a manner that facilitates an ergonomic offload, such as priority bags first followed by local bags rather than having to move connection bags to get to priority bags. This is important, because priority and local bags are to be offloaded at the flights destination within a certain amount of time after arriving based on company guarantee. In contrast, transfer bags and US bags do not have the same time requirement as they are expected to be offloaded on a transfer belt for secure transfer to their corresponding flight as an inbound bag.  At which point, the ramp agent will update the database to reflect their current flight statuses.

Finally, when the flight is completely offloaded that aircraft will now be assigned a new flight and the previous flight will be considered complete. If any passenger misses a flight they will be assigned a new bag tag to correspond to their new flight and if any bag is lost or misses a flight they will be assigned “rush” status and sent on the next available flight to their destination. In fact, a baggage database is necessary to properly manage this process with the least amount of problems possible.

2- Business Rules

The rules provided are for a Bombardier Q-400 series plane, these are the most common aircraft used by WestJet. Other aircraft will have their own cargo hold requirements.

One guest can have one PNR (reservation)

One PNR (reservation) can have many guests

One PNR (reservation) can go to one destination

One destination can have many PNR (reservation)

One PNR (reservation) can have many connections (cities)

One connection/transfer (cities) can have many PNR (reservation)

One guest can have many boarding passes

One boarding pass can have only one passenger

One boarding pass can have one flight

One flight can have many boarding passes

One flight can go to one destination

One destination can have many flights

One aircraft can have only have flight

One flight can have one aircraft

One flight can have many guests

One guest can have many flights

One flight can have up to 78 guests

One guest can have many bags

One bag can have only one guest

One bag can have many bag tags

One bag tag can have one bag

One bag can have only one size category (checked, oversize, carry-on)

“checked” bags are up to 51 lbs and is within 157 cm (62 in.) in total combined dimension (length + width + height)

“Oversized” bags must be under 100 lbs or exceeds 157 cm (62 in.) in total combined dimension (length + width + height), but less than 203 cm (80 in.)

“carry-on” bags can be up to 53 cm x 38 cm x 23 cm (21 in. x 15 in. x 9 in.) in dimension

One bag can have one connection bag status (connex, prio-connex, us-connex)

One transfer status can have many bags

One bag can have one final destination

One final destination can have many bags

One bag can have one load status (inbound, stand-by, rush, regular, AVIH)

One load status can have many bags

Every non-rush bag must have a boarded passenger assigned to it

Animals (AVIH) can only be loaded in the Aft cargo compartment “floor”

One cargo hold can have many bags

One bag can have one cargo hold

Aft cargo compartment can hold up to 3500lbs, split between “shelf” (up to 1000 lbs) and “floor” (2500 lbs)

Forward cargo compartment can hold up to 1000 lbs

One bag can have one offload status (local, priority, gate-checked, hot, cold, US)

One offload status can have many bags

Priority Bags are to be offloaded first

All gate-checked bags must be offloaded at the gate within 5 minutes of flight arrival time

All final destination bags (local, priority) must be offloaded within 17 minutes of flight arrival time.

One bag can have one connection belt

One connection belt can have many bags