IATA Level of Service (LoS) Best Practice

1. Introduction

The IATA Airport Development Reference Manual 10th edition introduces an improved Level of Service (LoS) concept that provides airport planners with a set of basic guidelines for sizing passenger terminal sub-systems (check-in, security, etc.). LoS considers space and waiting time requirements with the goal of achieving cost-effective airport infrastructure that satisfies the needs of airlines and their passengers.

2. What is the LoS?

Unlike other elements of airport infrastructure, the capacity of a passenger terminal building is not governed by fixed, pre-defined rules, but rather by careful planning. Level of Service (LoS) is a basic airport planning tool that provides a useful framework to support the design and expansion of airport terminal facilities and to monitor the capacity of existing facilities.

The parameters that define a passenger terminal's capacity are directly related to passenger experience and comfort factors that can be quantified. Therefore the LoS framework provides guidelines in terms of space, maximum waiting time, seating and occupancy for:

- Public departure hall
- Check-in area including self-service kiosks, bag drop desks/units and traditional check-in desks
- Security control
- Emigration control
- Gate holdrooms / departure lounges
- Immigration control
- Baggage reclaim
- Customs control
- Public arrival hall

The new IATA LoS methodology uses four categories to classify the service levels of passenger terminal facilities:

- Under-Provided
- Sub-Optimum
- Optimum
- Over-Design

The first two categories indicate facilities that do not meet criteria for space, waiting time, or occupancy. The final category, over-design, signals that that there is excessive space, an overprovision of resources and a facility that may be economically unfeasible to build and operate.

IATA recommends that planners should strive to achieve the 'Optimum' range for each facility. The aim is to ensure sufficient capacity within the terminal building and strike a reasonable balance between service quality and costs. An optimum facility will provide a good passenger experience and acceptable queueing times but without incurring excessive capital and operating costs.

3. Important considerations

Designing and planning airport passenger terminal infrastructure is a complex matter – therefore the LoS framework needs to be carefully assessed and understood before it is applied. A number of critical areas are especially important to consider before using LoS:

Subject Matter Expertise

- The successful use of LoS requires knowledge and expertise. Therefore, qualified professionals should be hired/retained to assist in its implementation.

Typical busy day

- The LoS framework should be applied within the context of typical busy periods. There are several definitions of typical busy period (e.g. IATA busy day[1], FAA busy day, 40th busiest hour, 95th percentile…); therefore the most appropriate should be used.
- The selected method should be used to identify the relevant period of time to apply the LoS. This period must never equate to the absolute peak times of the year to avoid overprovision.
- The main outcome of the busy period analysis is the identification of the 'busy hour'[2].
- Passenger demand usually fluctuates according to season, day of week or time of day; consequently, the LoS will also vary. Planners should therefore target an Optimum LoS in the knowledge that during peak traffic periods the optimum LoS may not be achieved. Likewise planners should also understand that during other periods of time, with lower traffic than the typical busy periods, the LoS may fall in the Over-Design category.

Design date

- Facility Design should be developed for a forecast 'busy hour' and should provide facilities that are phased in to operate at an optimum LoS for the required future period.
- Until the airport reaches that forecast level of activity, the facilities will function at a higher LoS. Depending on the timeframe (usually between 5 and 10 years)

[1] IATA defines the design day, or busy day, as the second busiest day in an average week during the peak month.

[2] The hourly profile of the 'busy day' is analyzed to determine the peak hour.

and forecast milestones being considered in the planning stage, facilities often are planned to fall into the over-design category during the new facility's initial start-up period particularly when the airport has a high growth rate forecast.

- However, over-design is an important planning consideration that needs to be discussed by both airport management and its stakeholders in order to ensure there is a clear understanding and support for the planning strategy.
- When an overdesigned sub-system will not reach its full capacity until well into the future (10+ years), the result is likely to be empty space, overprovision of resources and unnecessary costs.

4. Uses of the LoS

As a basic airport planning tool the LoS can be used for a number of different purposes.

Measure existing facilities, identifying bottlenecks and potential operational improvements

- The LoS can be used when physically measuring the performance of existing facilities to establish the relationship between current and expected performance.
- Those measures could help identifying the bottlenecks of those facilities and potential operational improvements to overcome the reduced LoS.
- The LoS should be measured at relevant periods, taking into account current demand compared with design dates and lead times. Failing to do so may generate misleading conclusions and misinterpretations of the results.

Conducting a capacity analysis

- A capacity analysis is a theoretical exercise with the objective to identify (using rules of thumb, mathematical formulas, simulation modelling…) the capacity of any airport sub-system (existing or planned) and its relation with current or forecast demand.
- Capacity definition for any passenger terminal subsystem cannot be understood without a quantifiable measure of the passenger experience and comfort. Therefore, LoS is required to determine the appropriate parameters for any capacity analysis of a terminal subsystem or building.

Designing new facilities

- The methodologies for designing new terminal facilities vary from simple rules of thumbs and capacity formulas, to more sophisticated methods like dynamic spreadsheet modelling or specialized simulation modelling software. What these methods share in common is the use of LoS parameters as a basic input.

5. The LoS in the context of concession agreements

- The LoS is often used by grantors of concessions as a set of minimum requirements for the concessionaire to fulfil as part of the agreement.
- It is important that the LoS be correctly interpreted and implemented in the concession agreement according to the LoS framework. This should include taking into account typical busy periods, lead times and design dates.
- It is strongly recommended that qualified professionals be hired when setting up these requirements in concession agreements. In addition, airlines and other relevant stakeholders should be consulted before any LoS requirements are set in a concession contract.
- IATA does **not** support any use of the LoS that is inconsistent with the principles and guidelines listed in this paper. This is especially important in the case of long term agreements such as concession contracts.
- IATA specialists can also assist to ensure a successful implementation (contact: airportdevelopment@iata.org).

6. What the LoS is not

Following the publication of the new LoS framework in the 10th Edition of the Airport Development Reference Manual (ADRM), instances of misunderstanding the proper use of LoS, have been identified. Several points are listed below to highlight what the LOS is not intended to do:

- The LoS does not provide guidance for terminal elements not specifically mentioned in section 2, such as circulation areas, structural areas, retail and toilets
- The LoS does not apply to other airport components such as the airside infrastructure, surface access or airport support elements.
- The LoS does not provide guidance on other terminal building components that may have a significant impact on the overall costs. Architectural design, ceiling heights, fittings, finishes and materials used are some examples of elements that are not defined in the LoS framework but should still be carefully assessed to ensure cost-effectiveness of the design.

Investment triggers

- The LoS must not be used as an automatic investment trigger.

- Demonstrating the efficient use of existing infrastructure and processes is a pre-requisite to capital investment. Major investment decisions should subsequently be based on a detailed demand/capacity analysis and evaluation of the existing and forecasted LoS status at an airport.
- Monitoring of the LoS can also be used to forecast and identify when to trigger the demand/capacity analysis.
- Failing to perform a full analysis and only using the LoS as an investment trigger will either result in investments that are not justified or that are provided too late.

Service Level Agreements (SLA)

While the LOS and SLA's are not mutually exclusive the goals, objectives, and application of both are very different.

- A Service Level Agreement (SLA) is a negotiated agreement between the airport and its main customers, the airlines. The result will be an agreed service level, a definition of how this will be measured and the targets to achieve in exchange for the charges paid.
- As highlighted in Section 3 the LoS is intended to provide planning guidelines that should be applied during typical busy periods for a given design date; while SLA parameters are defined for the purpose of continuous monitoring during the actual operation of the airport.
- The SLA will often also contain measures that are outside of the LoS framework; however, any formal measurement of airline performance should be avoided.
- See IATA position paper "*Airport Service Level Agreement (SLA) – Best Practice*" for additional information on Airport-Airline SLA.

7. User Consultation

The appropriate LoS values should always be established in consultation with the airline community and other stakeholders as appropriate. Consultation from an early stage in the planning process is a fundamental requirement to capture Users requirements and work towards consensus and informed, joint decision making.