

DIGITAL BROCHURE – PASSENGER FLOWS INCONTROL AIRPORT SIMULATION SOLUTIONS

SOLUTION PASSENGER FLOW SIMULATION

PRODUCT PEDESTRIAN DYNAMICS®

SHOWCASE BRISBANE AIRPORT

COMPANY PROFILE INCONTROL SIMULATION SOLUTIONS





PASSENGER FLOW SIMULATION

Facing great challenges at an airport terminal regarding capacity management, passenger security or commercial revenues? Analyze the passenger flows with Pedestrian Dynamics® simulation software!

KEY FEATURES

- Simulate up to 100,000 individuals
- Realistic crowd movement and behavior with unique passenger properties
- Quick & easy modelling
- Applicable to every airport environment
- Amazing 3D visualization
- Adjustable detailed output about passenger processes and utilization of infrastructure
- Import drawings & models based on industry standards
- Runs on standard PC

PASSENGER TERMINAL SOLUTIONS

In an airport terminal everything should be perfectly tuned in order to provide passengers an enjoyable time. Traveling by plane should be a pleasant experience, so numerous waiting lines and overcrowded areas must be avoided.

The above mentioned is a challenging and complex task for airport operators as they have to deal with many uncertainties such as differentiations in arrival- and departure times and fluctuations in passenger numbers. Still, all these ten thousands of passengers per day have to use the same facilities and follow the same safety procedures within a short time. Therefore it is important to use the available infrastructure of the airport in the most efficient way.

A thorough analysis of passenger forecasts, operational processes and infrastructures are required to make optimal allocations of resources for departures, arrivals and create efficient duty-rosters for airport staff. Achieving all of these objectives can be accomplished through the use of simulation.

Designers and architects also face major challenges when developing the infrastructures of airport terminals. Departure halls, lounges, corridors and gate areas should provide sufficient capacity and must be positioned logically. In addition, the infrastructure must meet all safety requirements. Trends like creating Smart Airports and new technologies set new demands and create new opportunities.

Using simulation software will guarantee ROI by improving terminal utilization, maximizing sales, create commitment from all stakeholders and most importantly; increase the passenger satisfaction!

SIMULATION SOLUTIONS

The INCONTROL simulation software Pedestrian Dynamics® is THE solution for understanding and improving dynamic passenger environments. By continuously simulating passenger flows in complex infrastructures, the evaluation and improvement of the safety and performance of the environment contribute positively to the perception of the passenger.

The INCONTROL simulation software is user-friendly, allowing several stakeholders to easily assemble various interface, creating a platform simulating the passenger flows, that is second to none.

Applying simulation software during the design and operational phase of an airport offers many benefits:

- Save time and money by evaluating and optimizing the safety and performance of the terminal during the design phase;
- Gain insight into the complete infrastructure, passenger flows, waiting times, process times and potential bottlenecks to improve the performance;
- Provide basis for staff schedules based on expected arrival times, pedestrian flows and process times;
- Support the development of evacuation and contingency plans;
- Optimize commercial attractive areas on the airport, based on pedestrian flows.
- Present the infrastructure of the airport in a 2D and 3D visualization to share the insights with your stakeholders;

PASSENGER FLOWS

Simulating passenger flows gains ground. Important reasons are the increasing attention for safety and security, the implementation of new technologies for identification and self-service facilities. With the use of Pedestrian Dynamics®, INCONTROL supports in finding the best solutions.

Simulation provides answers to complex issues related to capacity management and determining the optimal locations for commercial facilities at airports. Many different organizations such as airports, architects, authorities and emergency services are already using Pedestrian Dynamics® simulation software to support their mission.

INCONTROL SIMULATION SOLUTIONS

INCONTROL offers its state-of-the-art simulation platform Pedestrian Dynamics® to simulate passenger flows. The hands-on project experience and knowledge of our developers and engineers is used for the ongoing development of the software. With the software, expertise and network of INCONTROL we support every customer in achieving the best results in solving difficulties with passenger flows.

Examples of passenger flow simulations include our projects at Amsterdam Airport Schiphol and Brisbane Airport. Both airports use the INCONTROL software and simulation services extensively in order to optimize transferring passenger flows and to determine the best design option for the new terminal.

"Analyze bottlenecks, identify potential improvements and perform what-if analysis."

Facing great challenges at an airport terminal regarding capacity management, passenger security or commercial revenues? Simulating provides the solution.

Our showcases can be found at www.incontrolsim.com/support/ or contact one of our experts for more information.





PEDESTRIAN DYNAMICS®

APPLICATION AREAS

Pedestrian Dynamics® is applicable in a wide scale of domains:

- Stadiums & Arenas
- Museums & Exhibitions
- Events
- Theme Parks
- Shopping Malls
- Cities
- Airports
- Railway Stations
- Passenger ships



Pedestrian Dynamics® crowd simulation software is the ultimate tool to model, analyse, optimize and visualize pedestrian crowds in any infrastructure.

INTRODUCTION

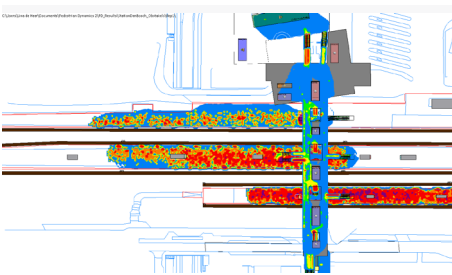
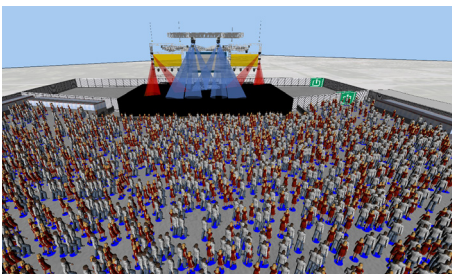
Pedestrian Dynamics® is an extensive and user friendly crowd simulation software application. It is designed for the creation and execution of large crowd simulation models in complex infrastructures. It can be used to evaluate the performance and safety of your environment in every phase of the life cycle; from design to operations.

Pedestrian Dynamics®:

- Offers a rapid model building environment which saves time and costs. Only a few steps are required to model most complex operations.
- Is flexible, robust and easy to use.
- Has been widely used in many large scale projects in most critical infrastructure environments including stadiums, airports, public transport terminals, mega events and urban planning.

Contact us for more detailed information or a demonstration of Pedestrian Dynamics®.

- www.pedestrian-dynamics.com
- www.twitter.com/pedestriandynam
- siminfo@incontrolsim.com



With Pedestrian Dynamics® you can easily simulate large crowds and determine the density within the infrastructure.

BENEFITS

Pedestrian Dynamics® crowd simulation software has a proven track record to analyze and optimize large crowd flows. Crowd simulation enables you to:

- Decrease costs:** by optimizing the infrastructure during the design phase, high additional costs can be avoided during the operations.
- Regulation compliance:** help evaluate and address regulatory compliance with local and international safety mandates and norms.
- Predict & anticipate:** the model enables you to predict the crowd flows and anticipate.
- Analyze the risk:** analyze the risk and the safety of people and infrastructures in every phase of the life-cycle; from design to operation.
- Optimize Evacuation:** Develop, test and optimize evacuation and data-driven response plans.
- Answer "What If":** Quickly compare alternative designs and scenarios on-the-fly.
- Improve commerce:** Increase customer satisfaction by improving pedestrian flows, experiences and comfort and identify the commercial attractiveness of locations by flow measurements.
- Present & convince:** Effectively communicate with all stakeholders in the decision making process.
- Operate efficiently:** Optimize and increase operational efficiency within the given environment and with available resources.

KEY FEATURES

Pedestrian Dynamics® offers:

- Import of industry standards (CAD/CAD 2015, XML, CityGML and many more)
- Integrated 2D&3D models
- Fast simulation runs
- Simulation of large realistic crowds up to 100,000
- Explicit Corridor Mapping (ECM)
- Extensive set of model drawing tools
- Unique agent properties
- Domain specific elements
- Easy scenario definition
- Intelligent dynamic routing
- Microscopic and mesoscopic
- Integrated output module with automatic report generation.
- Easy movie playback and recording



INDUSTRY

Crowd Simulation & Infrastructures

APPLICATION AREA

Airport

COUNTRY

Australia

CHALLENGE

Improve and support the decision making process, in order to maintain the desired service level while capacity is increasing.

SOLUTION

INCONTROL modeled a current and future situation for the terminals and analyzed pedestrian flows.

KEY TO SUCCESS

With simulation software you can analyze bottlenecks, identify potential improvements and perform what-if analysis.

For the sixth year Brisbane Airport was ranked as the best Australian Airport. They chose INCONTROL's simulation software to keep this position!

BRISBANE AIRPORT

Brisbane Airport, situated in South East Queensland is the third largest in Australia (on passenger numbers) and ranked 61 in the World. For the sixth year in a row Brisbane Airport was ranked by the ACCC as the best Australian Airport for overall quality of service, standard and availability of facilities. The airport consists of two terminals, domestic and international, two runways and is operational 24 hours a day 7 days a week. In the year 2009 the international terminal served approximately 4 million international passengers and 14.5 million domestic passengers. By 2015 the international terminal is predicted to host more than six million passengers.

EXPANSION TERMINALS

Major project works were planned for both the domestic and international terminal to be able to host the growing number of passengers. Recently the international terminal has been extended with more capacity at all levels. Capacity increased in the check-in areas as well as in security, customs and reclaim areas. Also at the domestic terminal plans are ready for big renovation works and extension of the terminal and car park facilities.



ANALYZE BOTTLENECKS, IDENTIFY IMPROVEMENTS AND PERFORM WHAT-IF ANALYSIS

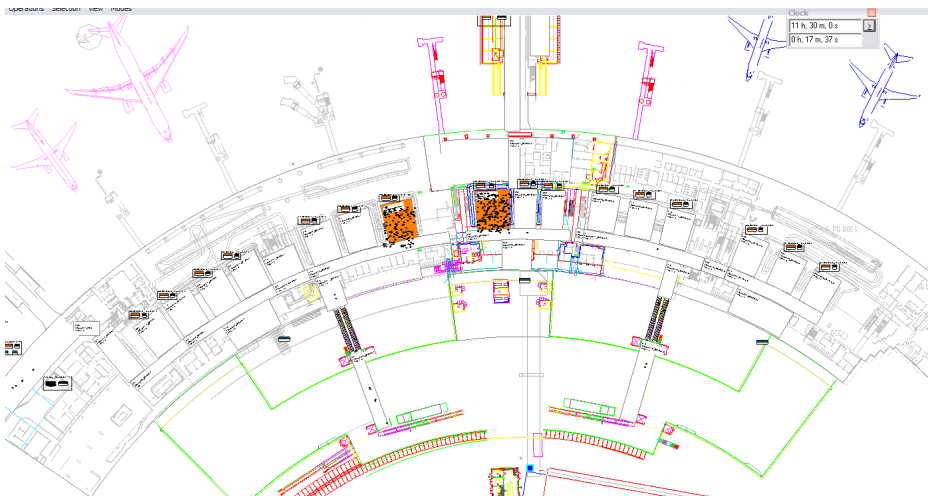
In order to improve and support the decision making process, Brisbane Airport decided to buy INCONTROL's solution for simulation of airport processes. Brisbane Airport was looking for a terminal modeling tool and models for both terminals. INCONTROL developed several models for Brisbane Airport. For both terminal buildings the current and a future situation have been modeled. The models give valuable insights in the passenger flows throughout the terminal buildings. They enable the user to analyze bottlenecks, identify potential improvements and to perform what-if analysis and thus support the decision making process on operational, tactical or strategic level.

USER TRAINING

Once the models were finished, operation managers at Brisbane Airport have been trained to use the simulation models for further analysis and experiments. The user can edit operational parameters like process times and capacity planning to represent actual or future airport operations. An input module is provided where the flight schedule can be loaded. The input module generates passenger numbers based on aircraft utilization and transfer rates.

OUTPUT

Besides visual insights when running the models, the solution includes an output module which exports the results to Excel. The output module shows results of resource utilization, throughput times and queue lengths per process and per area. It also shows the dwelling time of passengers in the commercial areas.





COMPANY PROFILE

FACTS AND FIGURES

- Offices in The Netherlands (HQ), Germany, United States of America, Japan and China.
- Offers a worldwide partner network in more than 20 countries.
- 25 years of experience in developing simulation software.
- Successfully implemented more than 5.000 solutions worldwide.

It is our mission to make clients and partners successful by offering the most innovative simulation solutions.

INCONTROL SIMULATION SOLUTIONS

INCONTROL Simulation Solutions is the leading manufacturer of simulation software with over 20 years of experience. Our product portfolio contains Enterprise Dynamics®, Pedestrian Dynamics®, ShowFlow® and EDX®. Each product is developed for a specific market and tailored to the users. Key markets include:

- Logistics
- Manufacturing
- Airports
- Harbors
- Rail & Public Transport
- Crowd Safety & Infrastructure

MISSION

Our mission is to make our clients and partners successful in their field of application by offering the most innovative simulation solutions. Clients use our

simulation software to simulate large scale logistic systems and infrastructures such as baggage handling systems, container terminals, train stations, assembly lines and football stadiums. Our simulation software enables the user to cope with time, costs, resources, reliability, safety and sustainability.

Solutions are implemented at leading companies worldwide. Our intensive educational efforts have led to a successful use of our simulation software at universities, schools and institutes all over the world.

Our offices are located in The Netherlands, Germany, the United States of America and China. Via these offices and a worldwide partner network we provide software, implementation, product training and a 24hr support to our products.

SOFTWARE

INCONTROL is the owner of various simulation software packages. This software is implemented and distributed by our own offices and our worldwide partner network. Each package has a strong simulation platform with an open architecture. The platform is used in combination with a library of user-friendly objects.

The software can be offered to the clients as:

- Platform; the client uses the platform to develop their own simulation applications and to develop their own library of objects.
- Platform and library of objects; the client uses the existing library of objects to develop a simulation model of their business operations.
- End user application; the client receives a simulation application, which is developed for the business operations of the client.

In consultation with the client it is determined which possibility complies to the client's needs for a successful implementation of our simulation software.

SERVICES

Implementation

If the client chooses an end-user application, INCONTROL works together with the client to implement the software. During this project an application is developed based on the client's wishes. INCONTROL has a department consisting of experienced simulation engineers. They will lead the project to a successful implementation.

Training

INCONTROL offers training for all users of our simulation software; starters as well as advanced users. This training can be followed at one of our training centers, located at our offices, or on-site at the customer. In addition to the standard training INCONTROL also offers customized training courses.

Maintenance & Support

As after sales service INCONTROL offers maintenance & support on the software. This includes full technical support, user support and product updates.



To evaluate how our simulation software can make you and your organization successful, please contact us or visit our website.