Walk-in Slide: AU 2014 Social Media Feed

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Modeling vehicle movements to optimise airport design
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Class summary

Learn how Autodesk Vehicle Tracking can be used in the preliminary design phase of an airport project. Create and then model the movements of both aircraft and ground support vehicles including push-back manoeuvers. But why stop there? It can also be used to model the movements of vehicles inside airport buildings and help to optimize the design and increase safety. Additional transport links can also be designed by using the "Light Rail" module and traffic flow can be improved by using the "Roundabout Design" module.

Key learning objectives

At the end of this class, you will be able to:

- Learn how to create and modify aircraft and ground-support vehicles
- Learn how to carry out standard aircraft maneuvers
- Think outside the box by modelling vehicle movements in non-standard locations
- Learn how to use additional modules to expand the BIM design process

Introduction

Introduction

- What is Autodesk Vehicle Tracking?
  - More than just swept path analysis for Highway Engineers
- How is this applicable to airports?
  - Construction projects
  - Operations

Vehicle swept path analysis is traditionally considered as a tool for Highway engineers to design roadways and parking lots/ This stems from the roots of this analysis when static turn template were published in AASHTO (US), DMRB (UK) and used by engineers. However with the development of ever more advanced software to carry out this type of analysis it is now being put to use in many areas never previously considered.

In applying this to Airports swept path covers the design and planning for vehicle movements at all stages of construction and standard daily operation of a fully functioning airport.

It is commonly said that airports are like mini cities. Therefore as you can imagine, the ability to design the airport layout while taking into account the space required to manoeuver aircraft is of great benefit. However it does not stop at aircraft alone. The management of ground support vehicles (both storage and routing) as well as transporter vehicles used inside buildings

Aircraft

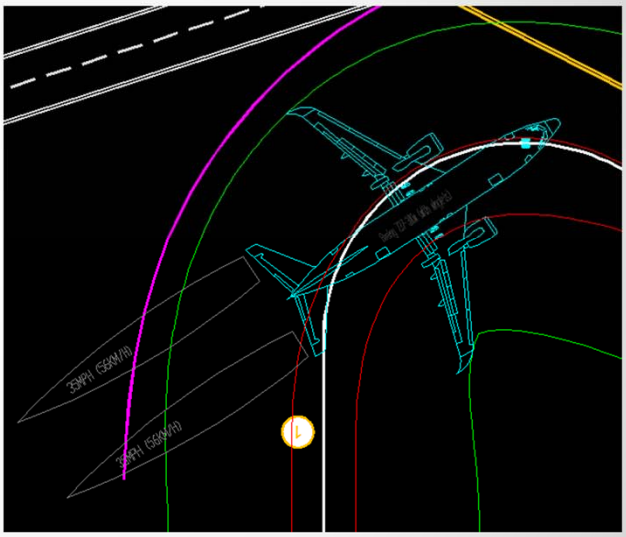
Understanding the Vehicles

- Arranged in Libraries
  - Grouped by publication or Manufacturer
- Pre-defined geometries
  - Vehicles can be edited
- Used/Edited vehicles go in the Pool
  - Vehicles saved directly in the drawing

Grouped together so easier to find what you need
Pre-defined vehicles. As with any swept path analysis software check the vehicle is suitable before you use it. Can't list all the vehicles in the world. Some are regularly updated (eg. Aircraft jet blast velocity contours). See the ones in the software as a base model. All vehicles can be edited.
Vehicles information is saved in the .dwg so you can share drawings and even custom vehicles others may not have in their Library can be used. If they don't have AVT they can use an Object Enabler or Explode the lines to unintelligent AutoCAD object.

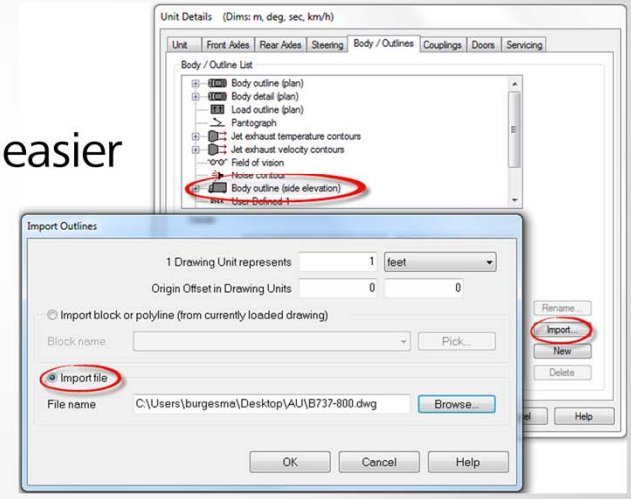
Driving

- AutoDrive Arc
  - General manoeuvers
  - Pushback
  - Standard ground vehicles
- Follow Drive
  - Taxiing



Editing

- Use the intuitive Vehicle Wizard to create vehicles
- Aircraft are more complex so easier to import a data file



Ground Vehicles

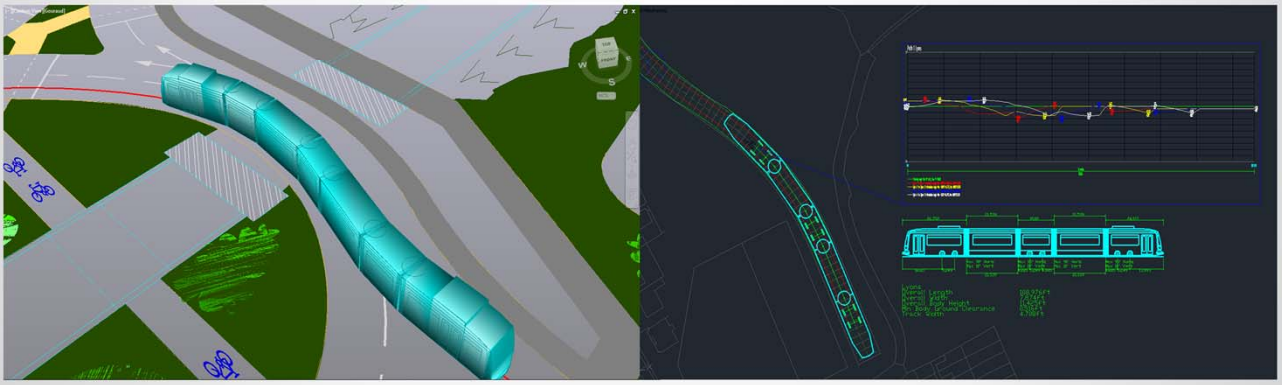
Ground Vehicles

- Ground support vehicles
  - power, A/C, food, baggage, etc.
- Construction vehicles
- Maintenance and service vehicles
- Operational vehicles

Light Rail

Light Rail

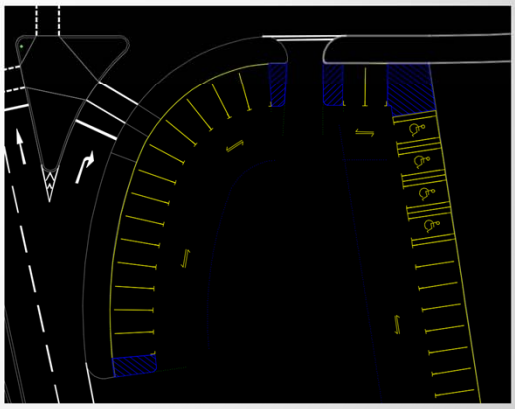
- Large airports use light rail for connections between Terminals and external transportation networks



Parking

Parking

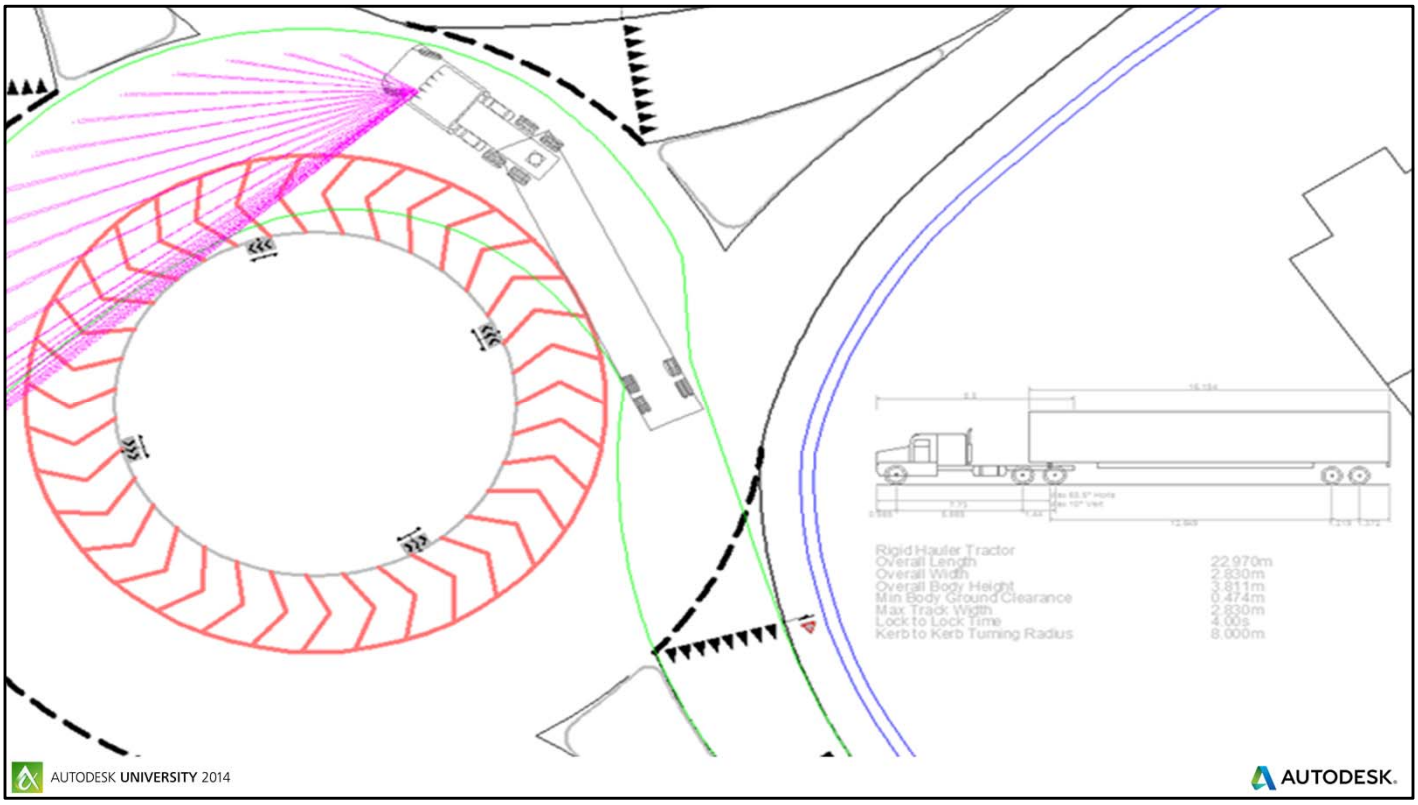
- Airport expansion/development generally means more passengers.
- Requirement for additional parking
- Automate the drawing process
  - More time optimising the design
  - Evaluating alternatives



Road Design - Roundabouts

Roundabouts

- The majority of people arrive at airports via a road network.
- Roundabouts are generally the preferred intersection design in and around airport campuses because they:
  - Are relatively compact intersections
  - Can expedite rapid, interactive vehicle movements
  - Accommodate many different types of vehicles safely
  - Are popular at high volume locations as they can efficiently handle greater traffic flows


Rigid Hauler Tractor
Overall Length 22.970m
Overall Width 2.830m
Overall Body Height 3.811m
Min Body Ground Clearance 0.474m
Max Track Width 2.830m
Lock to Lock Time 4.00s
Kerb to Kerb Turning Radius 8.000m
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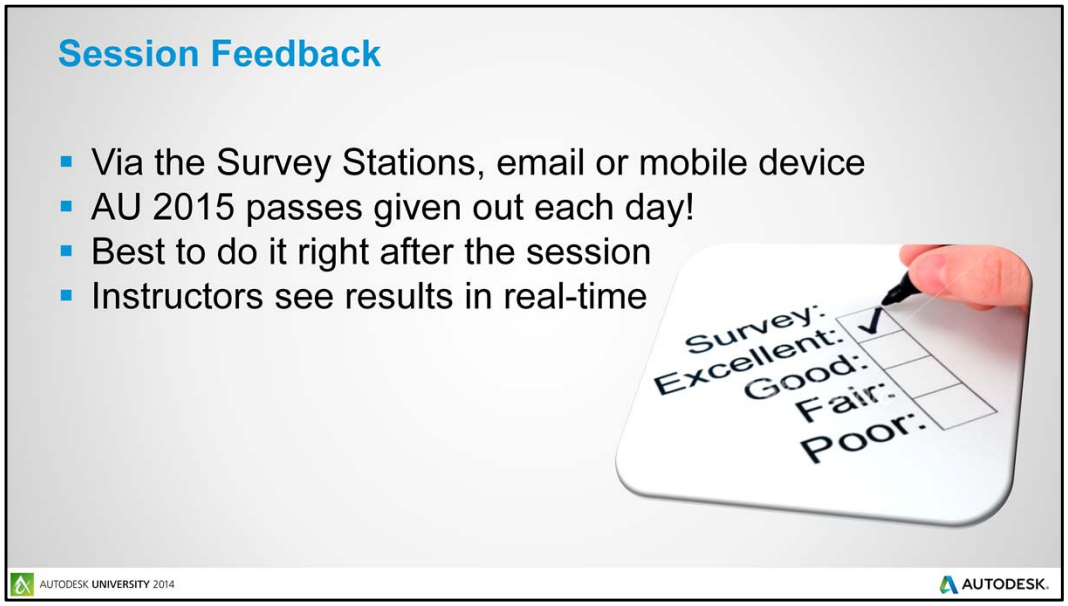
Technical Demonstration



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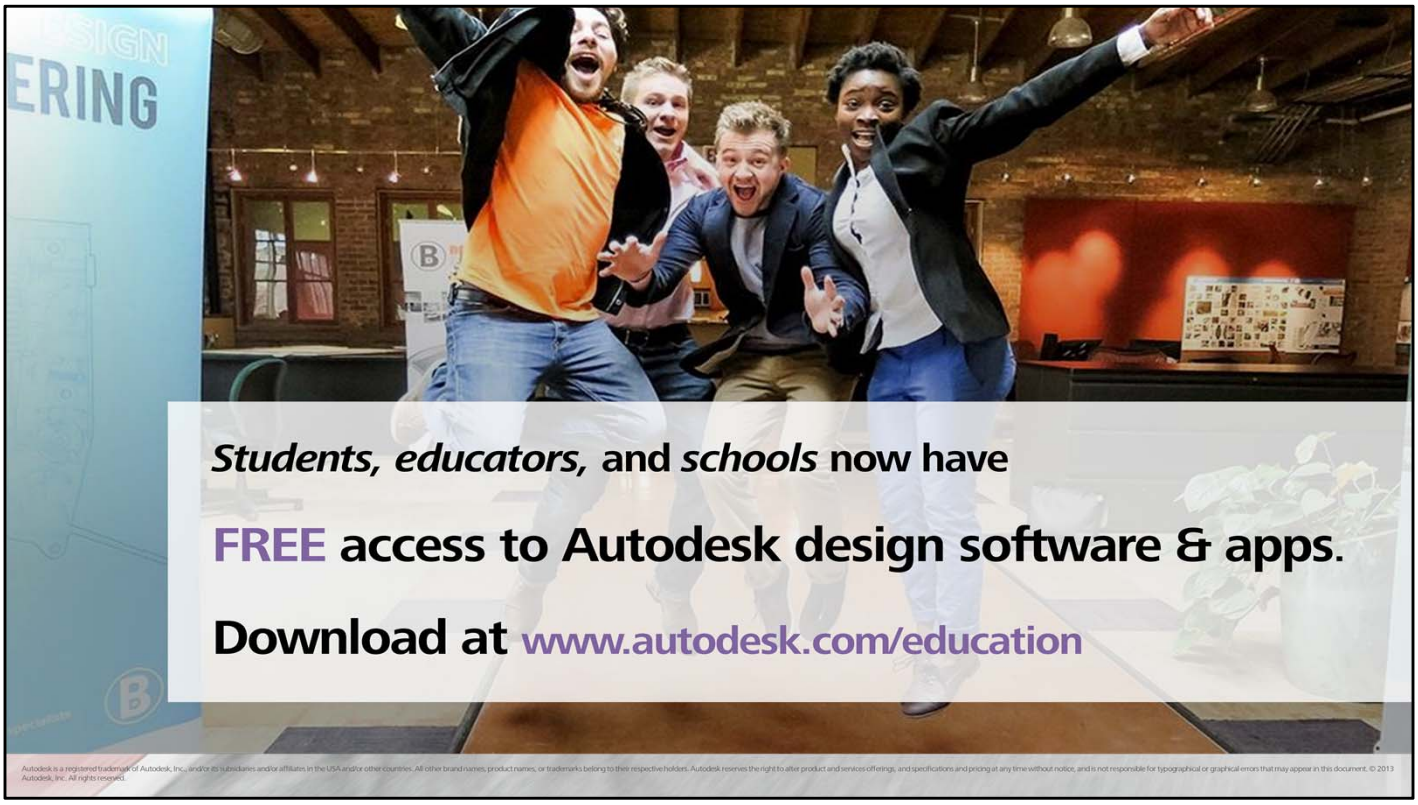

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