



Final Presentation – Group 3

# **AIRFIELD SURFACE MARKING AND GROUND LIGHTING TEACHING AID**



# WHO ARE WE?

## ✕ Expert developers

- + Tristan Aubrey-Jones
- + Christopher Franklin
- + Jussi Kosunen
- + James Sewell

## ✕ Stakeholders

- + John Hamshare (BAA)
- + Mike Poppleton (ECS)
- + Bob Walters



# OVERVIEW

- ✖ Problem – the why?
- ✖ Our solution – the what and how?
- ✖ Demonstration – the ‘wow’.
- ✖ Conclusions – the wind up.
- ✖ Questions – the ‘well done’...



What's it all about?

# PROJECT SUMMARY

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# THE PROBLEM

- ✗ Airports have lights & markings
- ✗ They conform to complex regulations
- ✗ These regulations are essential for safe operation but....
- ✗ **Are a *pain* to teach.**
- ✗ Currently they are taught by our customer in straight lecture.
- ✗ He wants something better...



# OUR SOLUTION

- ✗ Teaching aid is required
  - + Primarily: Presentation tool
  - + Secondarily: Aid to self-study
- ✗ Initial customer ideas:
  - + A website.
- ✗ Over ambitious suggestion:
  - + Fully fledged 3D visualizer...
  - + (And then a cut down set of requirements for the SEG project)



# OUR SOLUTION

## ✕ Features

- + Graphical editor for building airfield layouts
- + 3D Visualizer which:
  - ✕ Automatically applies the regulations to the airfield to generate the appropriate lights and markings.
  - ✕ Displays 2/3D views with environmental settings.
  - ✕ Allows the user full control over the configuration in the control panel.
  - ✕ Displays relevant regulations in information pane.
  - ✕ Encourages participatory learning through the tutor tool.

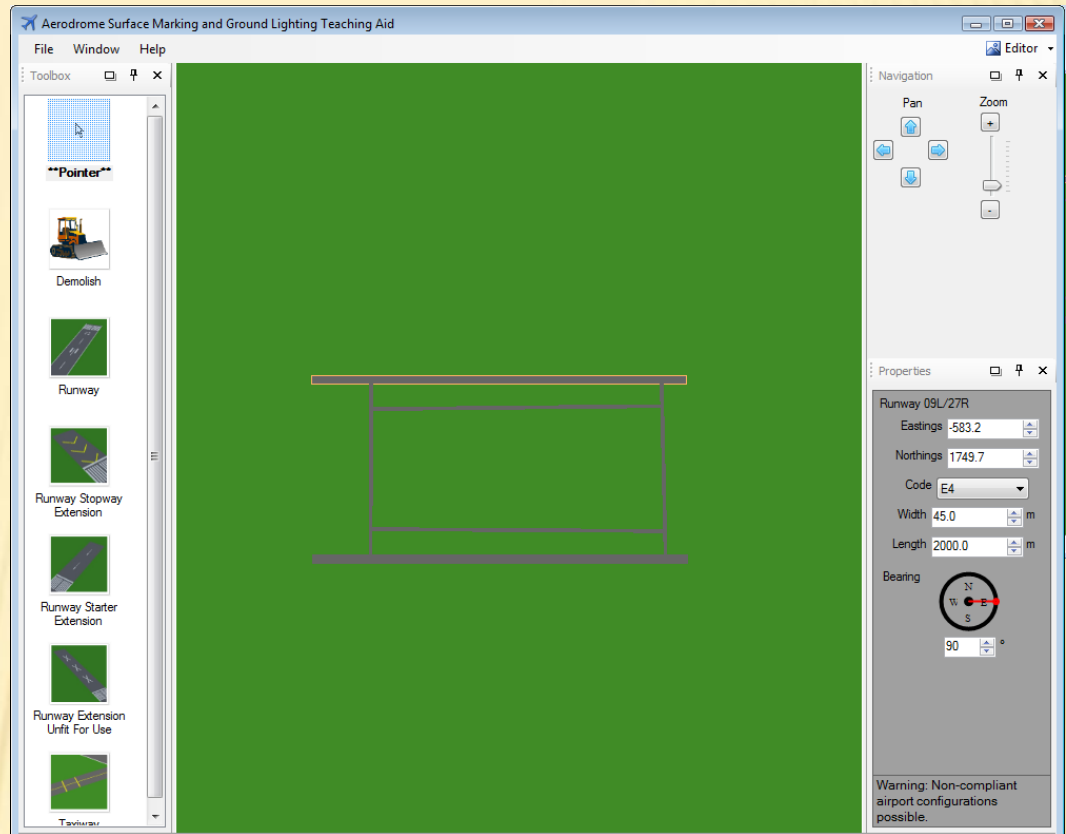


Does it actually work? (... gulp)

# DEMONSTRATION

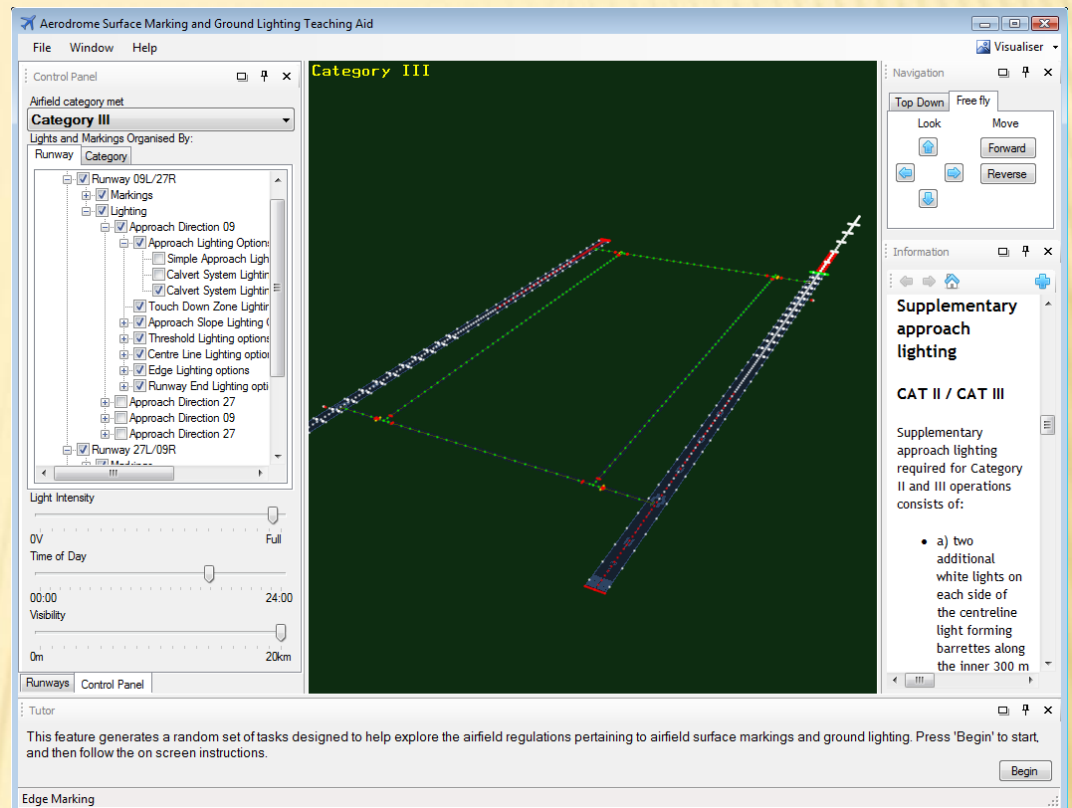
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## DEMONSTRATION: EDITOR

The philosophers have only interpreted the world, in various ways. The point, however, is to **change** it. (Karl Marx - 1870 AD)



## DEMONSTRATION: VISUALIZER

I hear and I forget;

I see and I remember;

I do and I understand. (Confucius - 500 BC)



How's it gone?

# CONCLUSION

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# THE EXISTING PRESENTATION...

## Approach & Runway Lighting



- ▶ Approach Lighting:
  - ▶ Simple - 1 Bar;
  - ▶ Calvert - 5 Bar;
  - ▶ Supplementaries (**Red** and **White** barrettes) – ‘SHINGALS’.
- ▶ Precision Approach Path Indicator (PAPI).
- ▶ Runway Lighting:
  - ▶ Threshold (**Green**) and Stop End (**Red**);
  - ▶ **White** Edge (changing to **Yellow** if no C/L);
  - ▶ **White** Centreline (changing to **R/W** then **Red** towards end);
  - ▶ Touchdown Zone (TDZ) (**White** barrettes).





# CAN NOW BE COMPLEMENTED WITH:

Aerodrome Surface Marking and Ground Lighting Teaching Aid

File Window Help

Category III

Runways Control Panel

Visualiser

Navigation

Top Down Free fly

Look Move

Forward Reverse

Information

### Supplementary approach lighting

#### CAT II / CAT III

Supplementary approach lighting required for Category II and III operations consists of:

- a) two additional white lights on each side of the centreline light forming barrettes along the inner 300 m of the approach centreline, the lights in each barrette being spaced 1.2 m apart; and
- b) red side row barrettes of four lights spaced 1.5 m apart on each side of each centreline barrette over the inner 270 m of the approach lighting system. The lateral gauge of the barrettes should be equal to that of the Touchdown Zone (TDZ) lighting as described in paragraph 5.8.1. The pattern is illustrated in Figure 6.2 and the light characteristics are specified in Figure 6A.2.

Three stages of luminous intensity are required for this part of the system:

THRESHOLD

Tutor

Touch Down Zone Lighting

“I hear and I forget;  
I see and I remember;  
I do and I understand.”  
(Confucius - 500 BC)

## SUCCESSSES

- ✖ Requirements met:
  - + Including taxiways and
  - + Tutor 'random quiz' extensions

## DISAPPOINTMENTS

- ✖ Awaiting an OpenTK bug fix
- ✖ Extensions omitted
  - + Aprons & stands

# THE PRODUCT: DID WE SUCCEED?



# THE PROCESS

- ✖ Requirements: *cling to your customer!*
- ✖ Design: *do it early, properly, and as a group.*
- ✖ Implementation: *don't reinvent the wheel.*
  - + C#, OpenTK, XML, DockingControls.
- ✖ Testing: *use a bug tracker.*
- ✖ Documentation: *use a wiki.*
- ✖ Report: *plan as a group, delegate, edit other people's work.*



## THE GROUP

How well did we work together?





# THE GROUP

- ✖ Communication.
- ✖ Begin work as a team, delegate, review as a group.
- ✖ Play to individual's skills and experience.
- ✖ Altruism breeds productivity.



# CONCLUSION

## ✖ Success?

- + Requirements met.
- + Deadlines met (phew).
- + Happy customer 😊
- + Group still friends.

## ✖ Lessons:

- + Get customer feedback early, use tried and tested 3<sup>rd</sup> party libraries, use collaboration tools, don't neglect the group.



(About the project)

# ANY QUESTIONS?

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