Global Runway Safety Simposium

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A DIFFERENT PERSPECTIVE OF SAFETY AND ITS RELATIONSHIP WITH SURROUNDINGS

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Panel 8

New Runway Safety Technologies and Initiatives

BACKGROUND

- A correct planning around airport can safeguard the territory from risk of air accident, and contribute to allievate the consequence for passengers involved in the crash and a more effective intervention of RFFS
- In the early 2000 years Italian Government issued a new and update version of National Air Navigation Code
- The Italian Air Navigation Code establishes a set of constraints to support an effective planning and ensure the safety of aviation activities at and in the proximity of the airport
- New prevision for the safeguarding of airport surrondings vs the risk of aircraft crashes
- Italian CAA provided additional guidelines and tools to the local municipalities for the definition of the zones interested by the *Land Use Compatibility Plans*

BACKGROUND

- Lack of an amount set of data on accident/incident for the comparison of its localisation

- In order to define the footprint of the Public Safety Zone ENAC, with the support of the University of Rome "*La Sapienza*", has developed a software tool named *SDAC - Spatial Distribution of Aircraft Crashes*

- The scope of *SDAC* is to manage and analyze the accidental data, also by graphical representation of the accident location respect to runway

The development of SDAC consisted in

Data collection from international database avalilable on internet

Definition of the graphic software Tool

SDAC

SOFTWARE INTERFACE

SDAC

DATA COLLECTION 1/3

For each accident the following information have been analyzed:

- Event Date (Y,M,D, Time);
- Airport Information (IATA and ICAO code);
- Runway data;
- Aircraft data (Aviation, Type, Maximum Takeoff Weight, Wingspan, Length, Seats);
- Crash point referred to runway (After/Before/on the Runway);
- Crash Zone (Internal or External to airport boundary) and Crash Coordinates (X, Y);
- Phase of flight (manoeuver);
- Instrumental or Visual Flight;
- Cause of accident;
- Number of people on board;

SDAC

DATA COLLECTION 2/3

- Number of people on board;
- Accident Consequences (Dead and injured on the airplane, Dead and injured on earth, Material damage);
- Data Source (origin Database);
- Method of reconstruction;
- Website address of the Data Source;
- Event Description;
- Geo-reference coordinates (Links to GMaps).

The actual release of the Tool, updated in 2016, considers more than 1700 events. From 1996 to 2015

Data is updated on a three years basis

SDAC

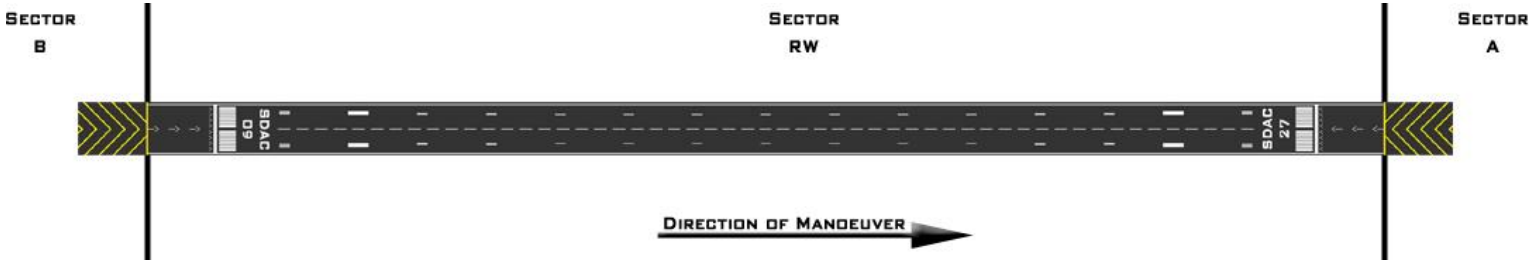
DATA COLLECTION 3/3

	SDAC2016			
Year	General	Military	Commercial	Total
1996	25	3	32	60
1997	18	1	41	60
1998	29	0	33	62
1999	30	0	40	70
2000	41	0	41	82
2001	36	1	29	66
2002	46	2	30	78
2003	52	2	36	90
2004	42	1	41	84
2005	56	2	50	108
2006	57	7	42	106
2007	28	1	56	85
2008	20	2	56	78
2009	23	8	57	88
2010	35	5	73	113
2011	36	3	66	105
2012	16	5	79	100
2013	10	4	101	115
2014	15	6	64	85
2015	6	5	73	84
Total	**621**	**58**	**1040**	**1719**

SDAC

GRAPHIC REPRESENTATION

The events are represented on a common virtual runway. Cause of different lengths of runways, and in order to perform a single visualization for all events, each position is normalized by means of a ratio with the length of related runway. In SDAC interface the virtual runway is drawn on a length of 1000 meters

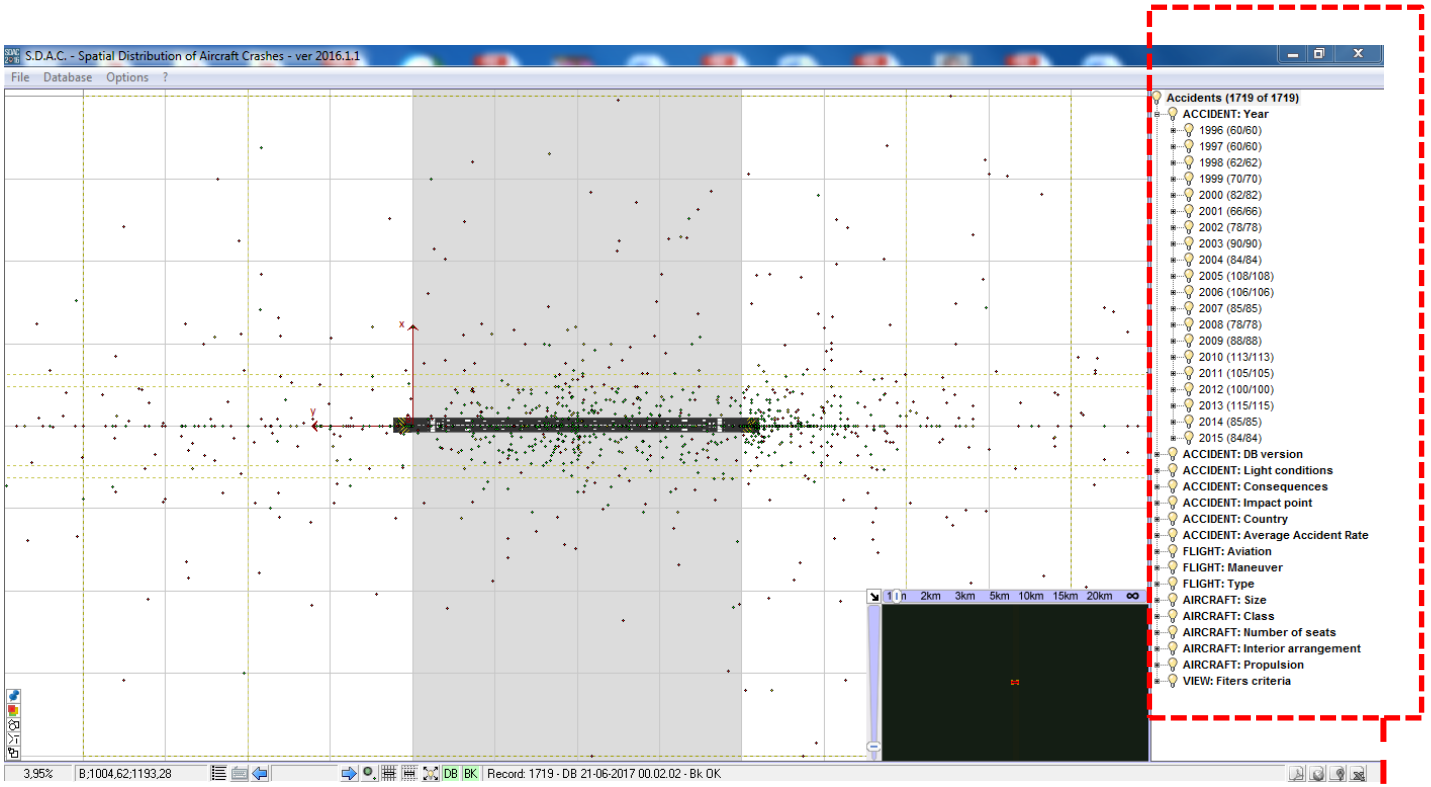


LANDING →

TAKE-OFF →

SDAC

GRAPHIC REPRESENTATION



FILTERS

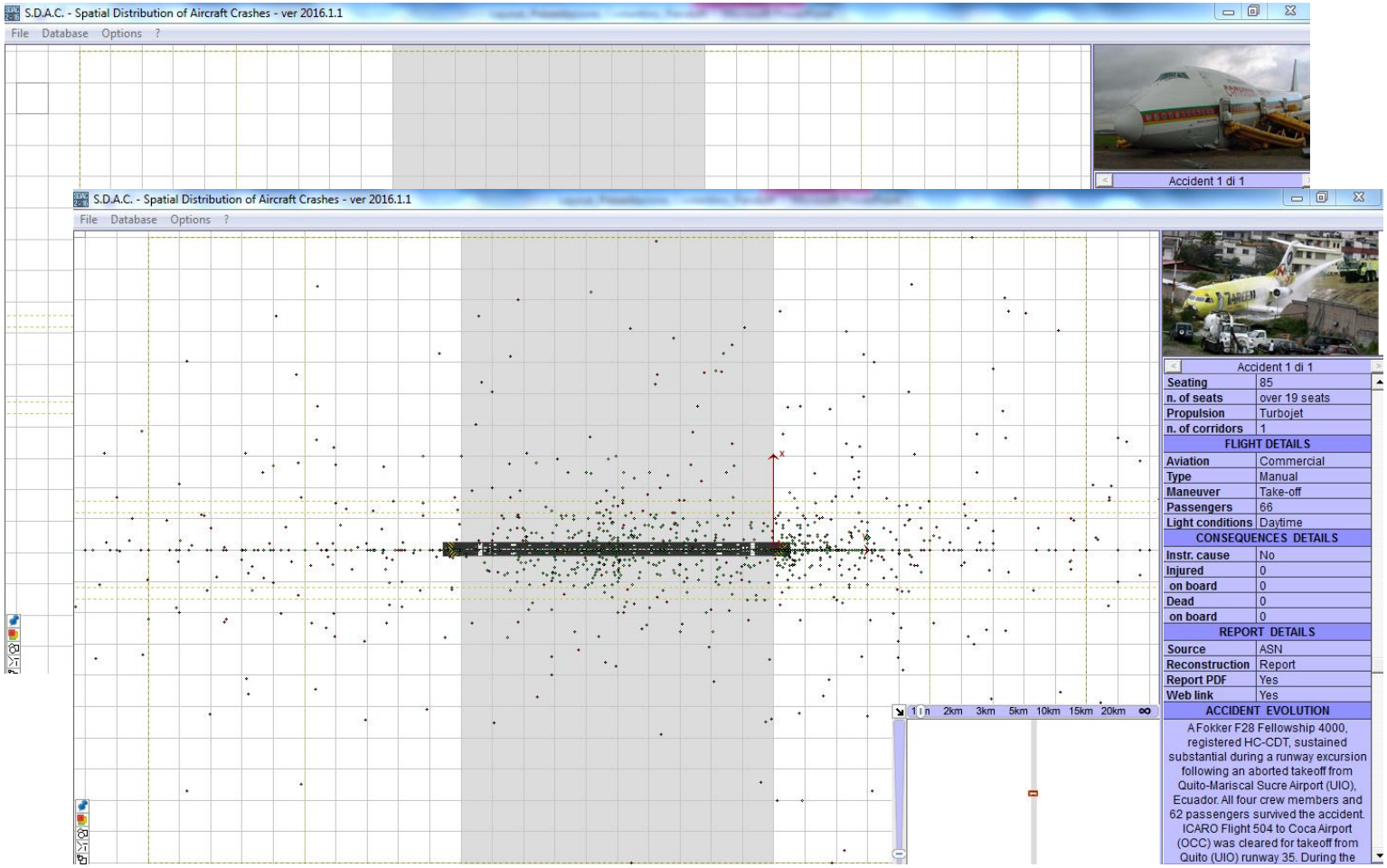
SDAC

MAIN FUNCTION

In order to analyze the cause of events:

- Filters: the tool allows the selection, from a list, of several kind of queries (years, consequences, flight phase, aircraft size/code, …)
- Graphics: SDAC can create charts about transversal and longitudinal distribution of accidents:
  - *e.g.: Events for veer-off for a code E aircraft*
- Positioning of selected accident on Google maps

SDAC EXAMPLE



CONCLUSION

The Database has been initially created in order to manage the "*land use planning*" around airport

The software-database is also useful means to:

- ✈ conduct statistical analysis on accidence occurrences;
- ✈ to study the characteristics of different events like runway excursions and the related issues;
- ✈ to evaluate possible relationship between consequences on passengers and characteristics of area of impact.

The Toll has been used also in the Aerodrome Design and Operation Panel (ADOP) in order to support, as rationale, some amendment to Annex 14.

Thanks to ADOP member advices SDAC has been improved and updated.