Swedish Fighters

39 Gripen

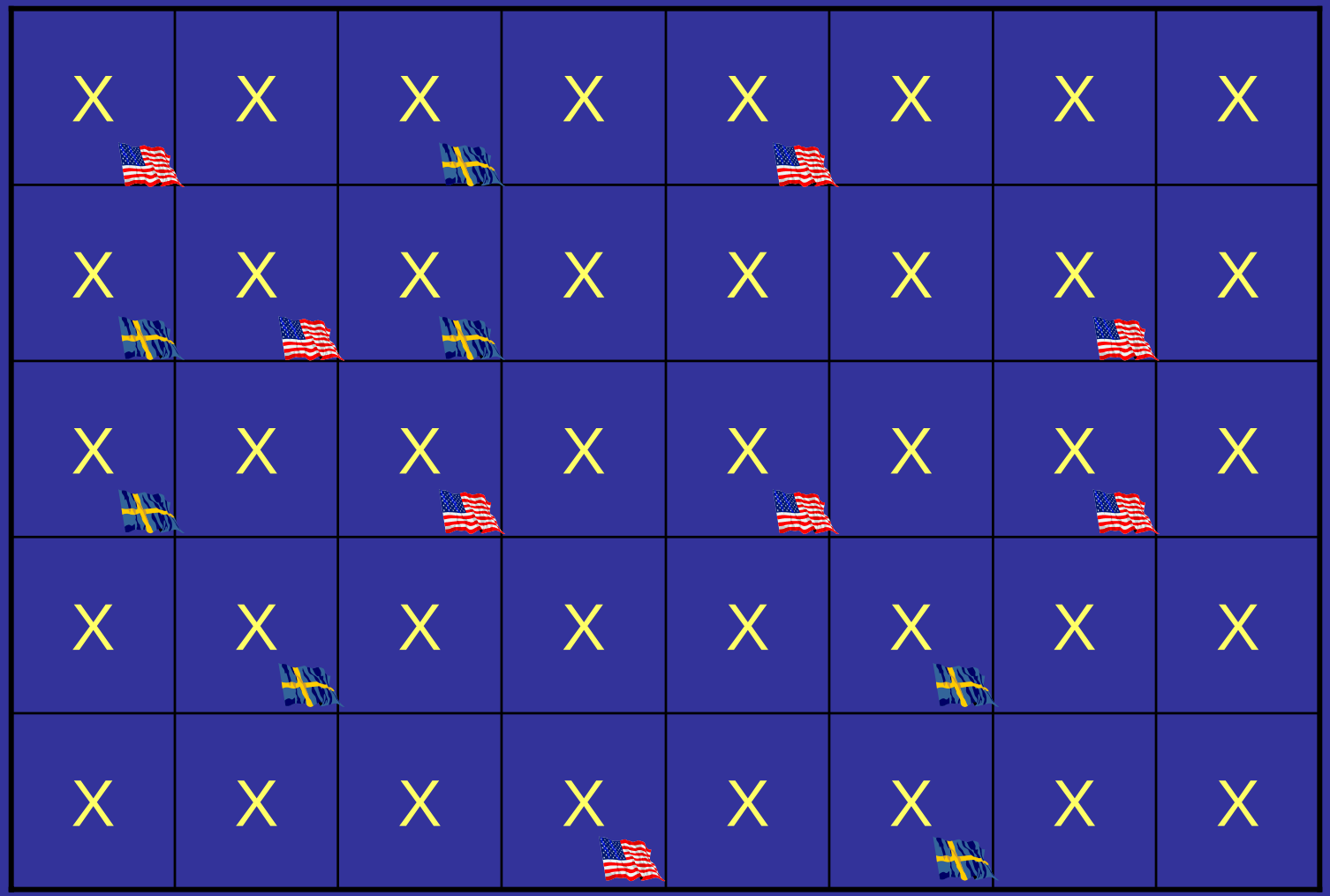
37 Viggen

35 Draken

32 Lansen

29 Tunnan

Air Force 2000


X X X X X X X X
X X X X X X X X
X X X X X X X X
X X X X X X X X
X X X X X X X X

Core Competences

- Data Links - Network
- Flight Control System
- Electronic Warfare
- Sensor Technology
- Missile Technology
- Aerodynamics
- Man Machine Interface
- Decision Support

System Integration

US

Sweden

Then

Strategic

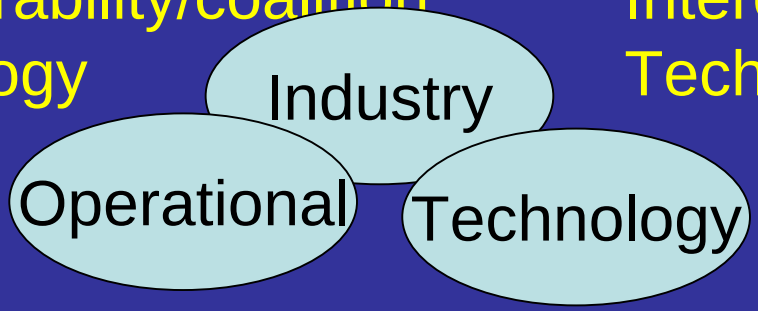
Technology

Co-operation

Now

Interoperability/coalition
Technology

Interoperability/coalition
Technology



Auto GCAS/ACAS

Early identified:

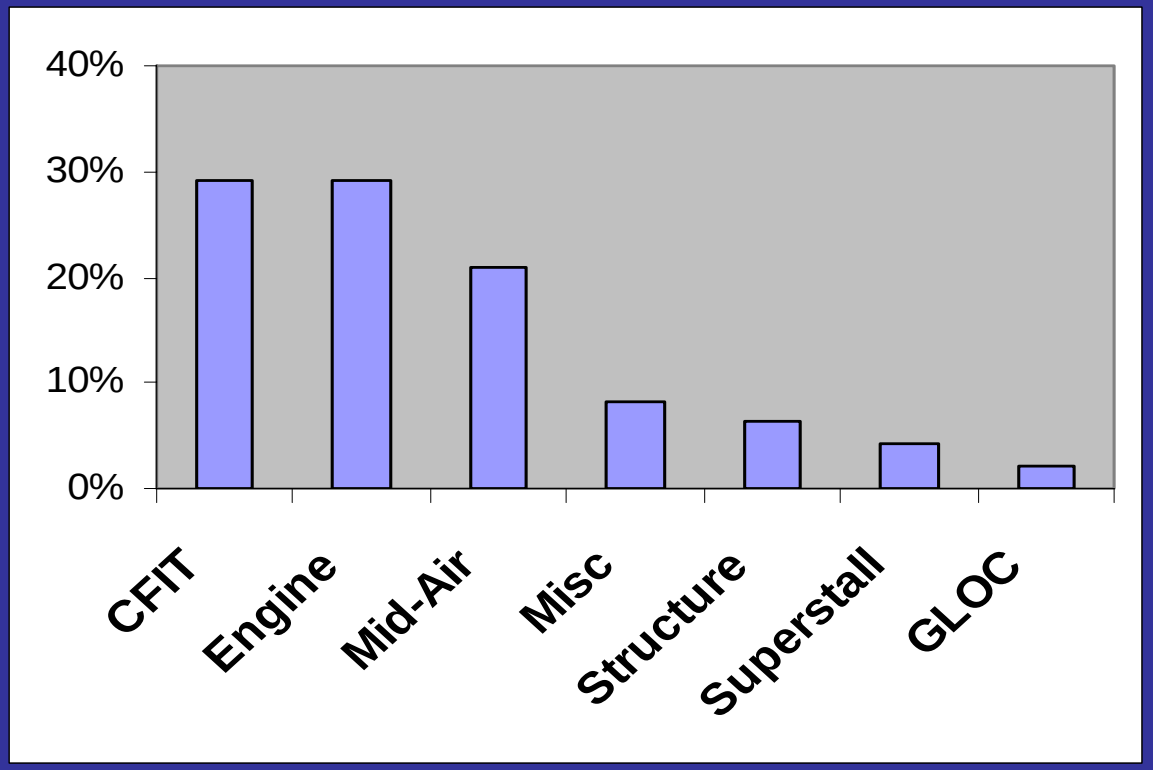
High G and ground collision

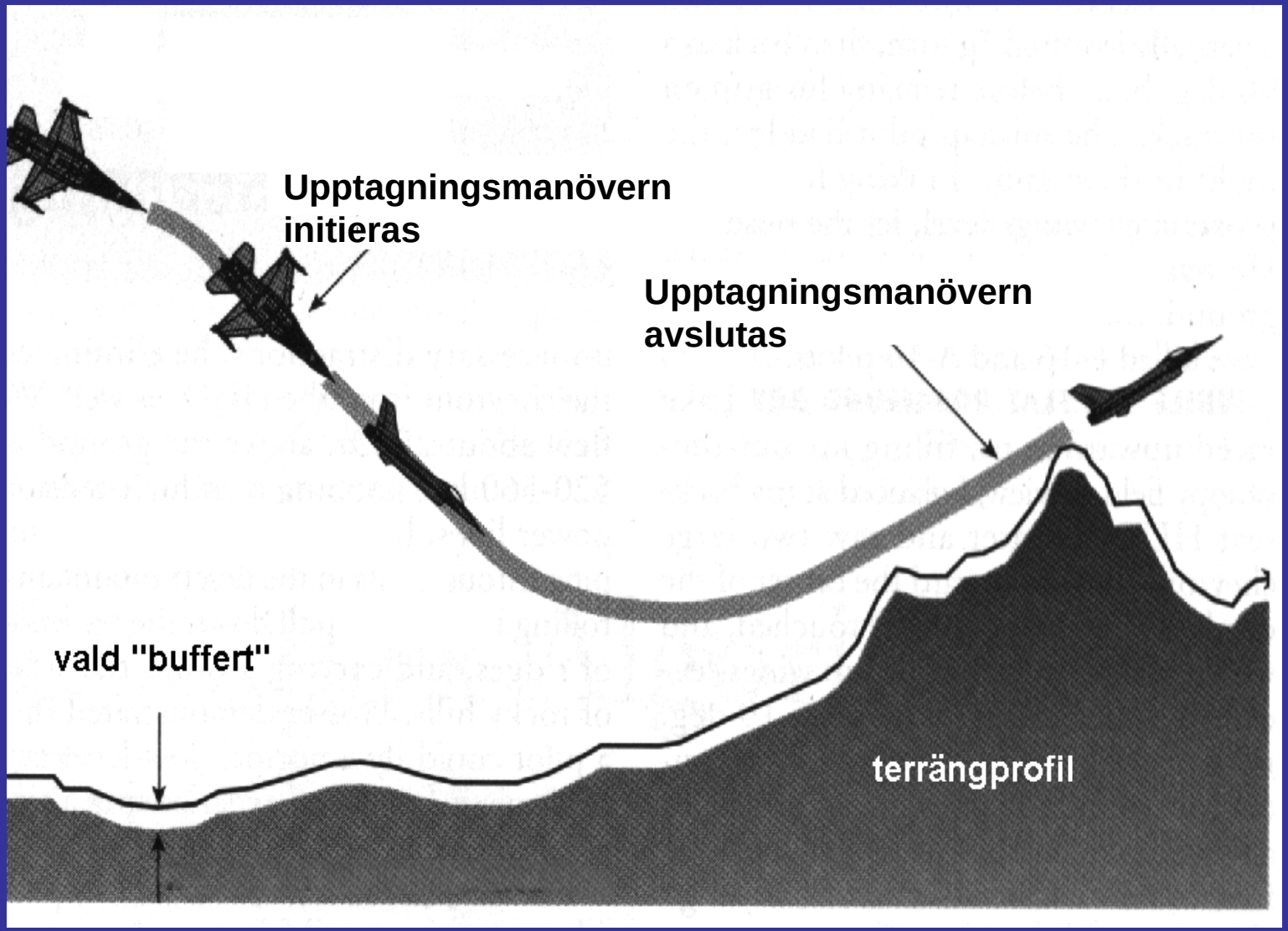
Low visibility/high turning rate and mid air collision.

Auto GCAS

Automatic Ground Collision Avoidance System

Background


40%
30%
20%
10%
0%
CFIT
Engine
Mid-Air
Misc
Structure
Superstall
GLOC

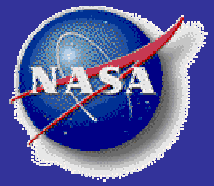

Upptagningsmanövern
initieras
Upptagningsmanövern
avslutas
vald "buffert"
terrängprofil

The AutoGCAS Team

FMV

SAAB

LOCKHEED MARTIN



Edwards AFB

Succesful program

- Nominated for Aviation week Laurel Award
- ”Runner up” for Flight International Flight Safety Award
- Will save Life

Automatic Collision Avoidance System

Automatic Collision Avoidance System

- Cooperation governed by a Project Annex to the US - Sweden Technology Research and Development Projects Agreement (TRDP)

- Equal share financing USA-Sweden

- Organizations involved; AFRL, USAF Test Pilot School (TPS) and FMV

- Three main contractors involved (Boeing, Lockheed-Martin and SAAB)

The AutoACAS Team

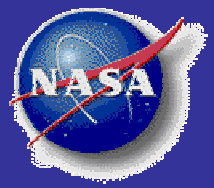
FMV

SAAB

LOCKHEED MARTIN

VERIDIAN

BOEING



Bhirle Applied Research

Eglin AFB

AFRL

FMV

Funding

Government

Contractors

Key Algorithm Parameter Studies

AFRL
412thTW/TPS
FMV

Boeing
Lockheed
SAAB

Algorithm Development & Verification

AFRL

FMV

Boeing/Bhirle
SAAB

Test Aircraft integration

Flight Test

AFRL
412thTW/TPS
FMV
Eglin
NASA

Lockheed
Veridian

Transition

F

Flight test

- The algorithm is evaluated during a flight test late summer 2003.
- The flight test is performed in cooperation with the US Air Force Test Pilot School at Edwards AFB.
- The tests were finished by 23 August 2003.
- The team will then evaluate the test results and issue a final report.

Test aircrafts were a “standard” F-16 and the in-flight-simulator F-16 VISTA.

Both US and Swedish pilots participated in the flight tests

- Preliminary results are promising
- The algorithm seems to work very well
- We got avoidance maneuvers, more or less as predicted in the simulations
- We have identified two essential parameters for a successful implementation, navigation accuracy and the fidelity of the aircraft response model.

• Will Save Life