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# GRIPEN E AVIONICS ARCHITECTURE

The Fight against Cost and Complexity

Aerospace Technology Congress 2016 Stockholm 2016-10-12

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# COMPETITIVE ADVANTAGE

- Conflict, in its most basic form, is a contest between decision making loops. The side with the FASTER and BETTER decision making loop wins any conflict
- It's all about getting inside the enemy's OODA-loop



Short Loop









# PACE OF CHANGE



#### PACE OF CHANGE



# MOVING AT THE PACE OF CHANGE



# MOVING AT THE PACE OF CHANGE



# BREAKING THE COST CURVE

Cost-efficient products...

... and value for money



# BREAKING THE COST CURVE



#### THE INVISIBLE MACHINE



# MODIFIABILITY AND VARIABILITY

The modifiability of a system is the ease with which it can be modified to changes in the environment, requirements or functional specification. Variability is the ability to quickly change in preplanned ways

# DESIGN FOR COMPOSABILITY



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#### TIGHT COUPLING



#### VARIABILITY \* COUPLING = COMPLEXITY



Strategy: Enable composability by decoupling, i.e. each (optional) feature shall be **self-contained**.

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### **TIGHT COUPLING**



#### MODIFIABILITY \* COUPLING = COMPLEXITY



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### A FOOD ANALOGY



# A FOOD ANALOGY.



#### EXAMPLE: TIME



#### **DEPENDENCY INVERSION & INFORMATION HIDING**



# PACKAGING & DEPENDENCY INVERSION



#### SERVICE PACKAGE



#### SERVICE LOCATOR



#### SERVICE GUARANTEED

Option A, Option B, <ProvideTime> Required Interface AST, UTC, Q <ProvideTime> Required Interface AST, UTC, Q Define Q as a Configuration parameter Service Package declares Q (nominal, envelope, ACL) Each Time Device Feature Package has to declare nominal Q and possible ACL dependent Q Time providers (devices) needs to be choosen wisely Each Time subscriber needs to state a minumum Q for guaranteed capability Radio Configuration needs to be choosen wisely Link Atomic GPS Time clock Radar Logic Time <ProvideTime> <TimeDeviceDriver>



# THANK YOU

Gripen E Avionics Architecture

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