


Aerospace Programs in the US and What needs to Change in the 21st Century

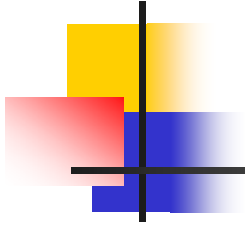


Mark Glauser

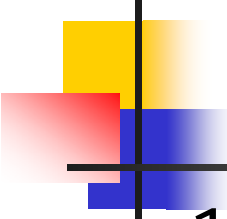
**Professor, Mechanical and Aerospace
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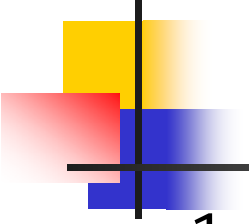
AEROSPACE PROGRAMS IN THE US



2007-2008 ABET PROGRAM CRITERIA FOR
AEROSPACE AND SIMILARLY NAMED ENGINEERING
PROGRAMS (www.abet.org)

1. Curriculum

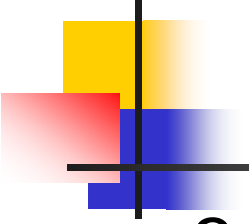
- Aeronautical engineering programs must demonstrate that graduates have a knowledge of aerodynamics, aerospace materials, structures, propulsion, flight mechanics, and stability and control.
- Astronautical engineering programs must demonstrate that graduates have a knowledge of orbital mechanics, space environment, attitude determination and control, telecommunications, space structures, and rocket propulsion.



2007-2008 ABET PROGRAM CRITERIA FOR AEROSPACE AND SIMILARLY NAMED ENGINEERING PROGRAMS (Continued)

1. Curriculum (Continued)

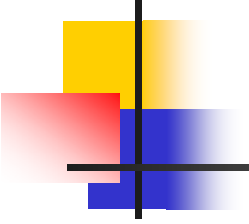
- Aerospace engineering programs or other engineering programs combining aeronautical engineering and astronautical engineering, must demonstrate that graduates have knowledge covering one of the areas -- aeronautical engineering or astronautical engineering as described above -- and, in addition, knowledge of some topics from the area not emphasized.
- Programs must also demonstrate that graduates have design competence that includes integration of aeronautical or astronautical topics.



2007-2008 ABET PROGRAM CRITERIA FOR
AEROSPACE AND SIMILARLY NAMED ENGINEERING
PROGRAMS (Continued)

2. Faculty

- Program faculty must have responsibility and sufficient authority to define, revise, implement, and achieve program objectives. The program must demonstrate that faculty teaching upper-division courses have an understanding of current professional practice in the aerospace industry.



AS AN EXAMPLE: COMPARE SU AEROSPACE
ENGINEERING PROGRAM TO SU MECHANICAL
ENGINEERING PROGRAM (Joint Department)

- [mech_curriculum_new\(rev\).doc](#)
- [aero_curriculum_new\(rev\).doc](#)

Programs only really diverge in the
second semester of the Junior Year



Possible Approach for Puerto Rico

Build on existing Mechanical Engineering Programs.

Start by offering Aerospace option to gauge interest.

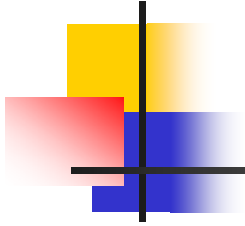
Utilize RPI, SU, Princeton, Cornell existing Aerospace curricula infrastructure via internet based courses

e.g., internet based grad class in turbulence
(George, Castillo, Glauser 1999)

Possible Approach for Puerto Rico (Continued)



As interest grows move towards ABET accredited Aerospace Programs by combining with ME departments. Hire faculty with expertise in the Aerospace area, begin to add lab infrastructure (also possible to use existing labs at RPI, SU and etc. via virtual lab concept)



What needs to Change in the
21st Century?



What needs to change.....

A few ideas.....

1. Increased emphasis on international programs and interactions
2. Implementation of the TRIAD, i.e., the integration of theory, experiment and computation, at both the undergrad and graduate level
3. Intelligent Systems and Control
ACROSS THE CURRICULUM



What needs to change (continued).....

A few ideas.....

2. Implementation of the TRIAD, i.e., the integration of theory, experiment and computation, at both the undergrad and graduate level

[EEWG_proposal\(9 Jan 07\).ppt](#)

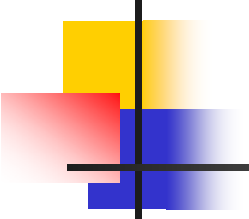


What needs to change (continued).....

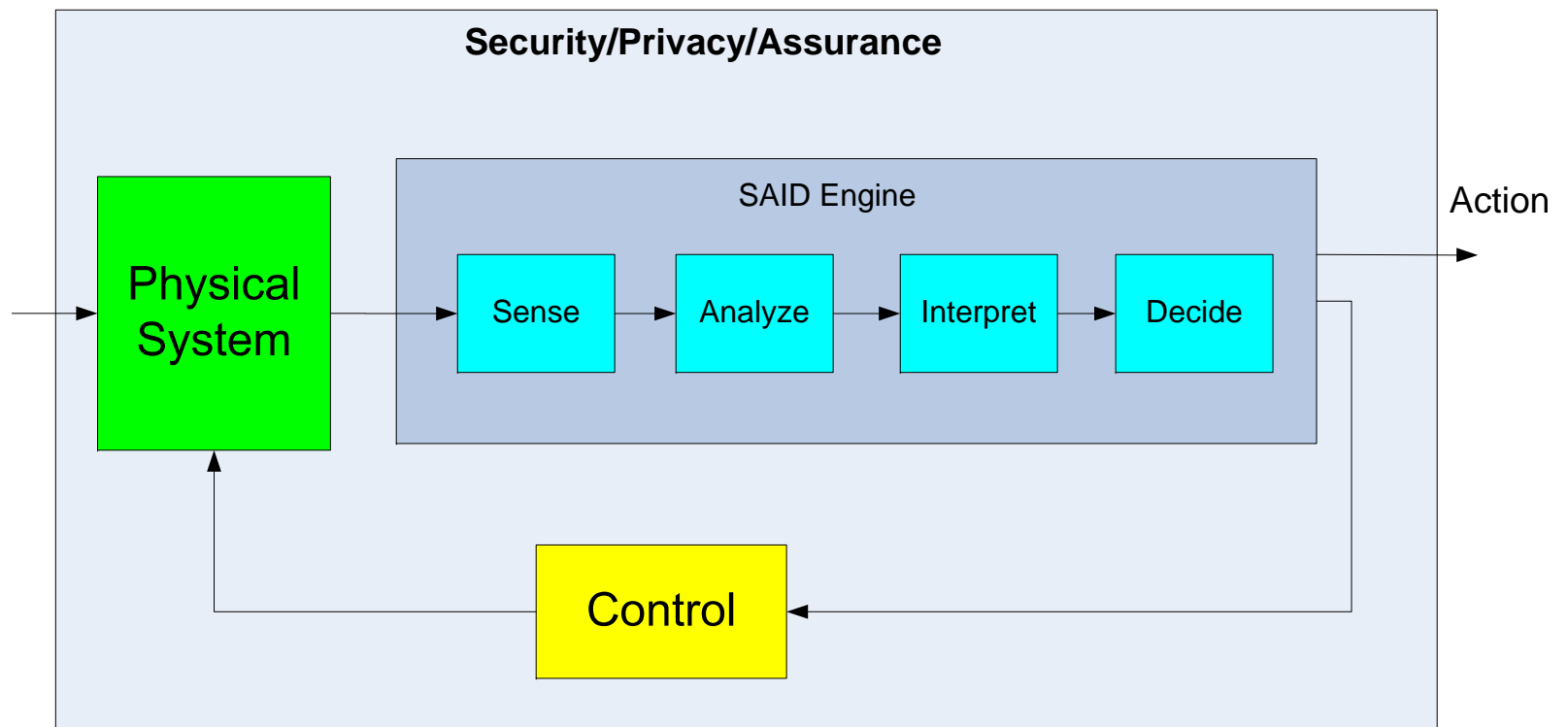
A few ideas.....

3. Intelligent Systems and Control ACROSS THE CURRICULUM

Monitoring and Control of Complex Information Intensive Systems

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- *Imagine a world where air travel is rarely, if ever, delayed by weather, plane, crew or hub availability. In this world, air traffic, ground management and ground transportation as well as parameters such as aircraft jet noise and fuel consumption are intimately integrated to allow real-time modifications in air course, local transportation to prevent delays, and ensure safety while simultaneously reducing aircraft jet noise and fuel consumption by an order of magnitude.*

Process Driven Systemic Approach



Sensis: Air Traffic Mgt Testbed

