

Innovation, Entrepreneurship and Ethics in Engineering Education

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### Innovation, entrepreneurship

>Two of the most abused words these days



# Myths of Innovation Where do new idea come from?

Epiphany?

Issac Newton's falling apple?

Einstein's ink?

Archimedes' Eureka?

Budda's tree?

Numerous myths



# Myths of Innovation Stories

- >All stories about epiphany are fantasies.
- >The last piece of the jigsaw made the news
- >All previous hard work was not mentioned.



# Myths of Innovation Possible facts

>Newton was bored after long hours of thinking, took a walk in the garden, relaxed, and had a fresh thinking about the problems

>Archimedes took a bath to relax......



# People do not want to believe that

Innovation is the result of hard work with strong foundation of core knowledge



### New Myths of innovation

Myth 1

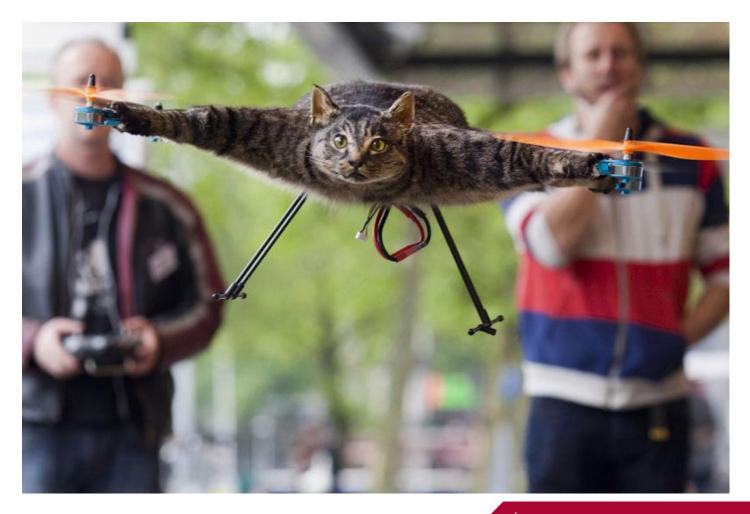
>University can "teach" students to be innovative

>Can we?

>How?



How can we equip our students with the necessary "tools" for him to fly (innovate)?





#### New myths of Innovation

Myth 2

> You can get rich if you innovate something

> Really?



> How can we help our student to turn a concept, prototype into a business?



### Entrepreneurship

>Can we integrate this into our engineering curriculum?

>How can university facilitate the growth?





#### Are we supposed to baby-sit them with university incubators?

#### 18 Mistakes That Kill Startups



1. Single Founder



2. Bad Location



3. Marginal Niche



4. Derivative Idea



5. Obstinacu



6. Hiring Bad **Programmers** 



7. Choosing the Wrong Platform



8. Slowness in Launching



9. Launching Too Earlu



10. Having No Specific User in Mind



11. Raising Too Little Money



12. Spending Too Much



13. Raising Too Much Money



14. Poor Investor Management



15. Sacrificing Users to (Supposed) Profit



16. Not Wanting to Get Your Hands Dirty

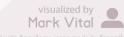


17. Fights Between Founders



18. A Half-Hearted Effort







### **Ethics**







#### **Ethics**

>Curriculum again?



#### Dilemma

>Do we have enough time to teach all these plus the core knowledge of Engineering?



#### Pick their brains

Prof Larry Shuman, University of Pittsburg

Prof Randy Collins, Clemson University

Prof KC Chan, Hong Kong Polytechnic University

Prof Aldert Kamp, TU Delft