Welcome to
CIAM Plenary Meeting
Open Forum Session

Agenda

- Weatronic – What‘s about
- Possibilities with Telemetry and Gyros

- What is a Gyro?
- Automatic Flight Control

- What could Weatronic do?
- Questions and Answers

Weatronic - What‘s about?

- Founded 2004 by Axel Westphal (1951 - 2010)
- Safety and reliability – the highest priority
- 2007 development of universal 2,4 GHz systems
- 2014 release of BAT transmitters for universal RC use without any limits

Weatronic – What‘s about

Tx Modules, Receivers, Telemetry

Transmitter conversion kits

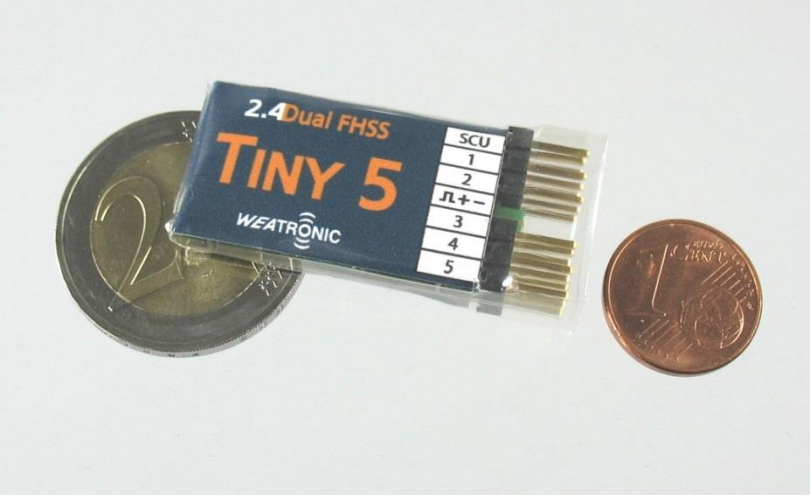
Special Solutions

Accesories

Transmitter

Receiver Tiny 5

- integrated patch antenna
- small and lightweight (< 5g)
- full telemetry capable



Receiver Smart 8

- Dual Receiver (Redundancy)
- Range > 3 km
- Optional with integrated gyro

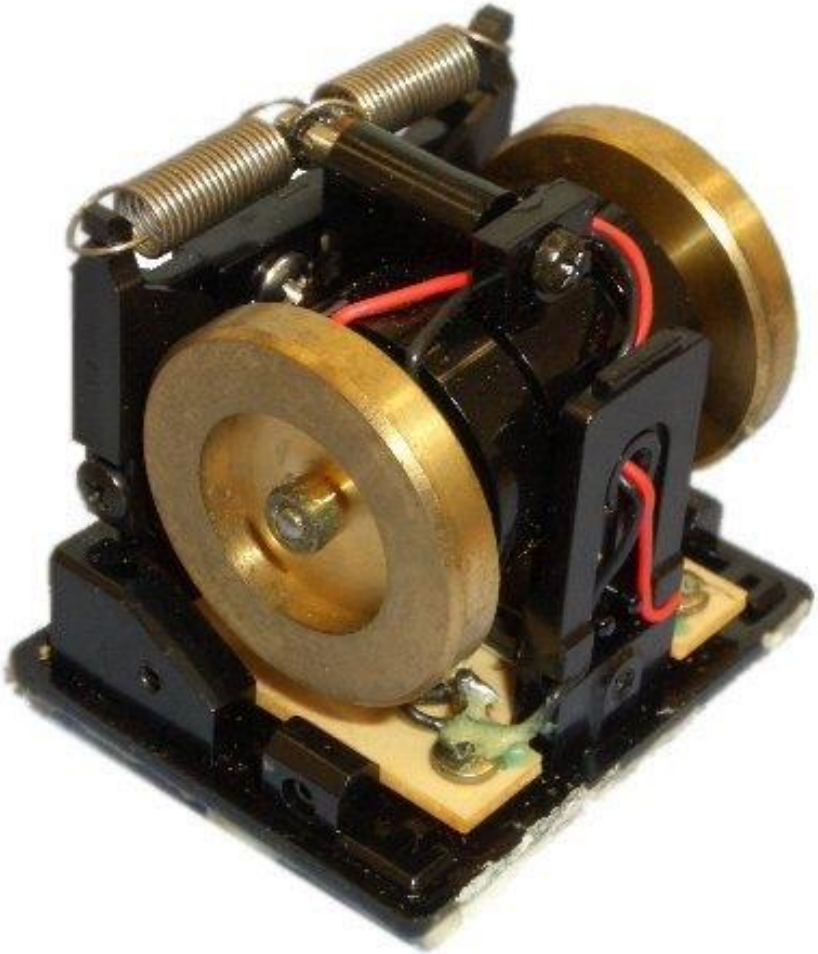
Rx System Gizmo

- Up to 30 Servos
- Extreme range of up to 5km with patch antennas
- Integrated datalogging
- Integrated gyros
- Integrated power managment also for high voltage servos

BAT - Transmitters

- Full redundancy transmission system
- No channels – only receiver limits the number of servos
- Maximum safety and reliability concerning power managment and flight control
- complete data logging
- Full access to telemetry values and gyro settings

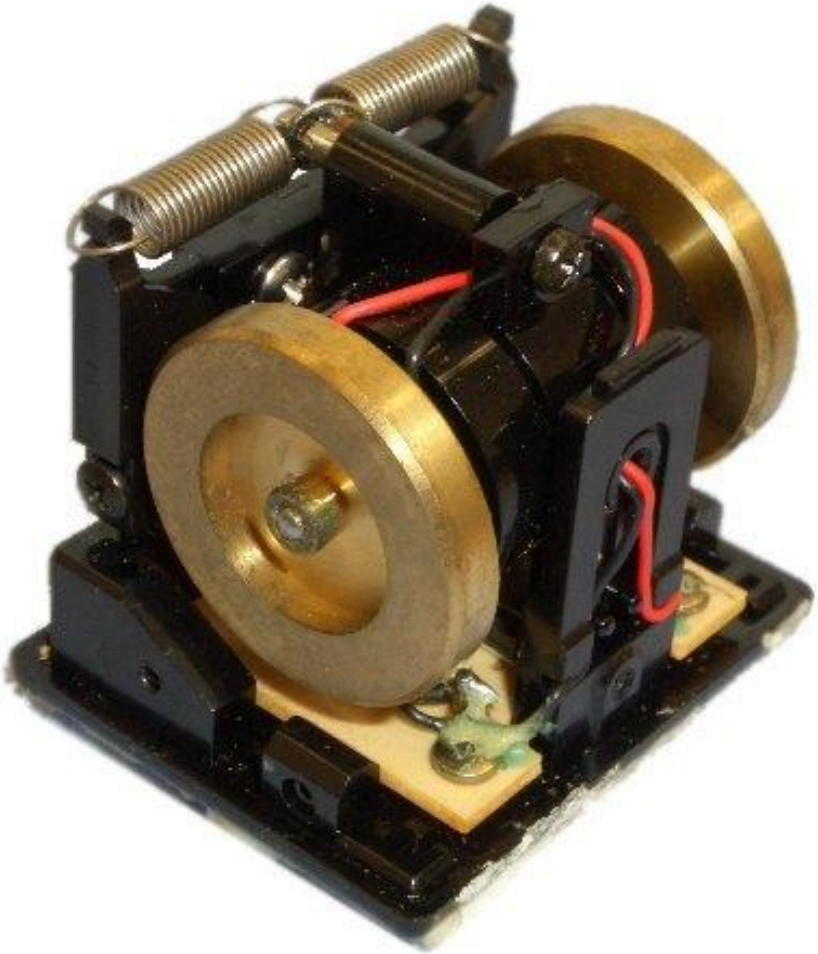
What is a gyro?



What is a gyro?

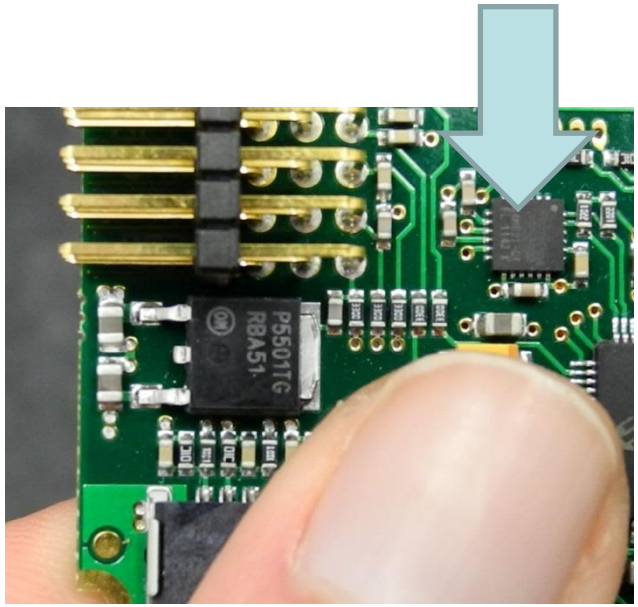
- Measuring angular rates
- Moving a servo analog to the measured angular rate

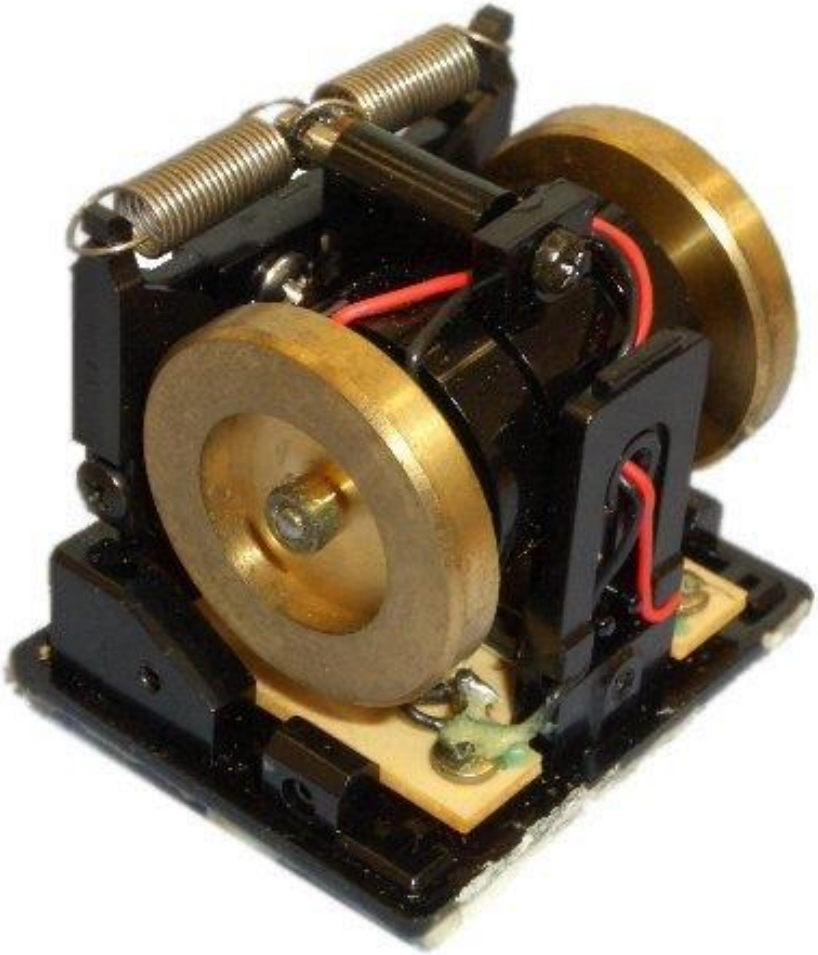
=> Damping of movements



What is a gyro?

3 x angular rate
3 x g-force
3 x magnetic direction

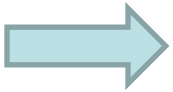




What is the benefit of gyros

Sensor values

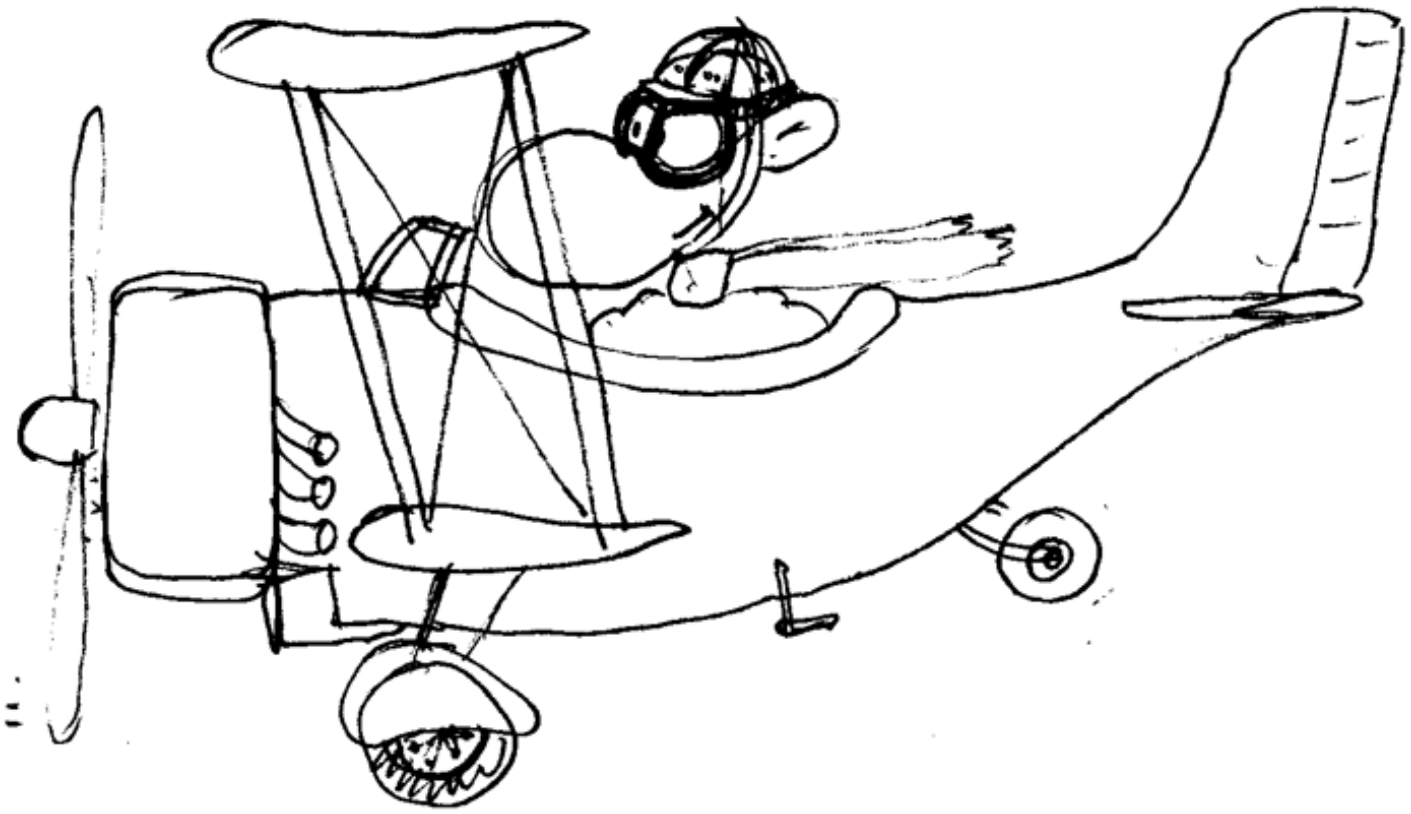
At least angular rate of one axis



Mathematical operations

Control of the flight attitude of the plane

What is the benefit of gyros



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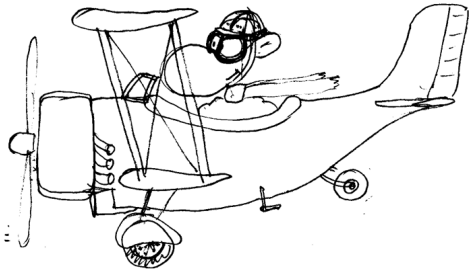

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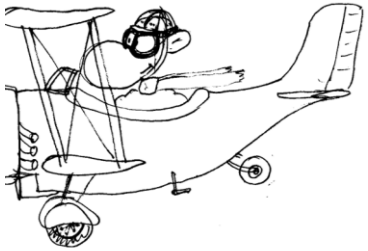

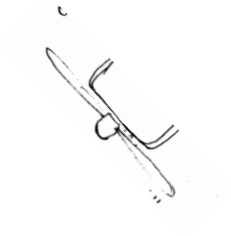

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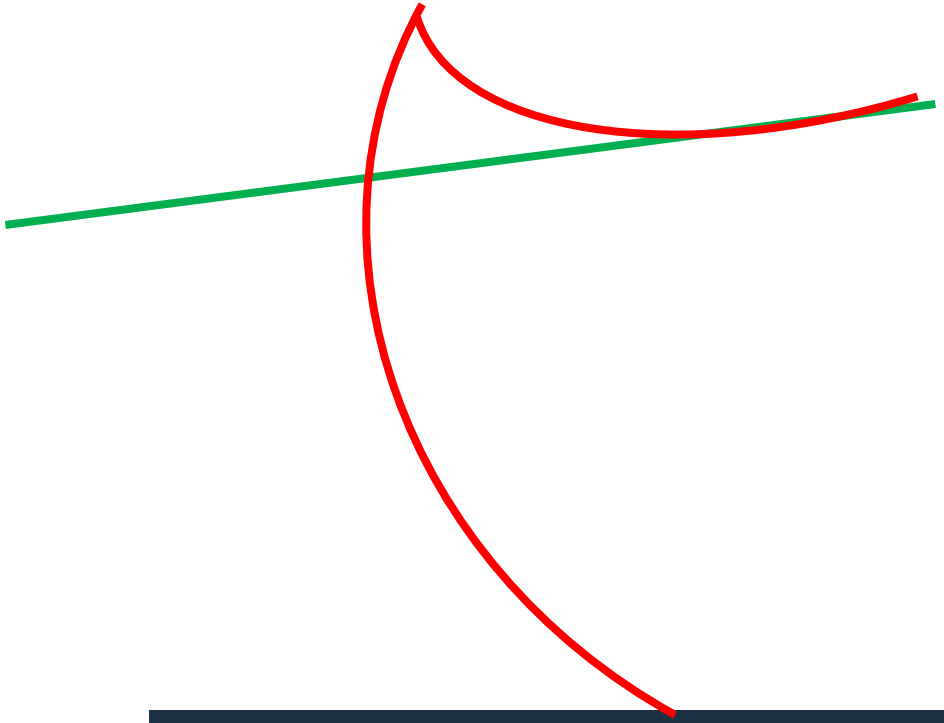
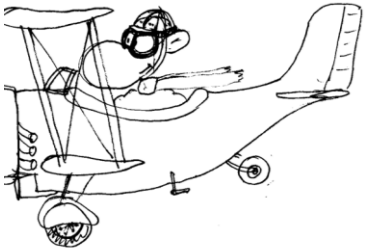
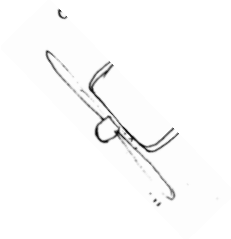




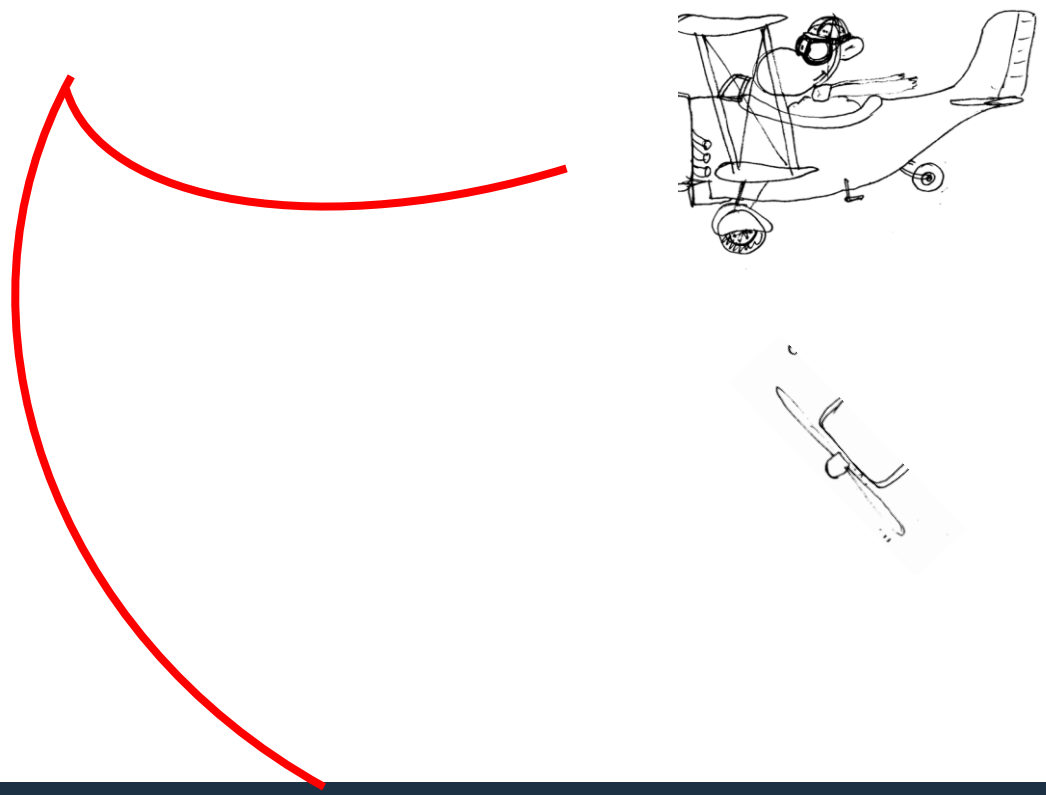


What is the benefit of gyros

Sensor values

angular rate of pitch axis

Damping mode gyro



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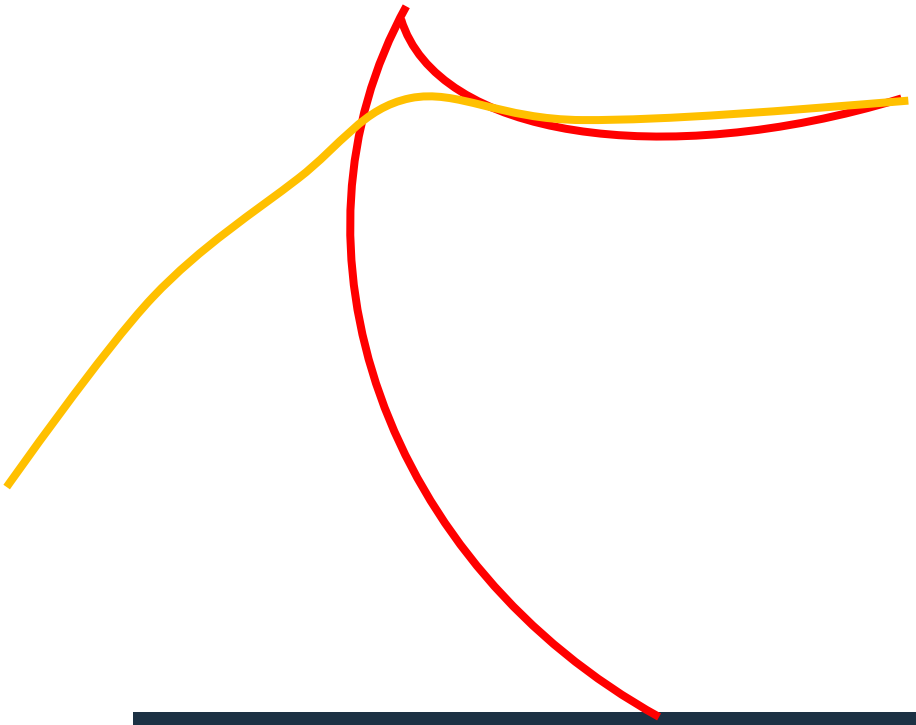
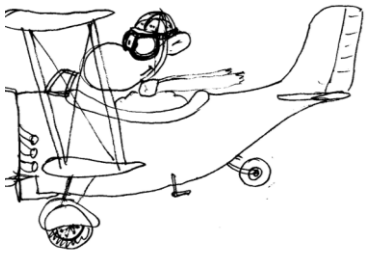
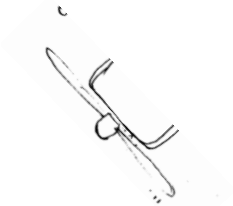






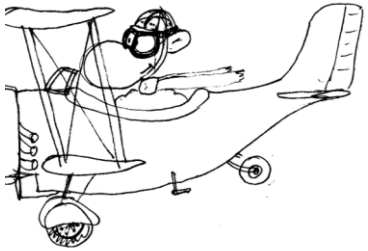
Stabilization of the flight attitude

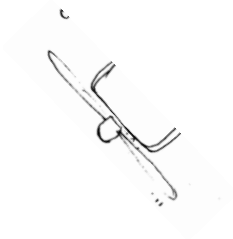
What is the benefit of gyros

Sensor values

angular rate of pitch axis

Some little mathematical operations





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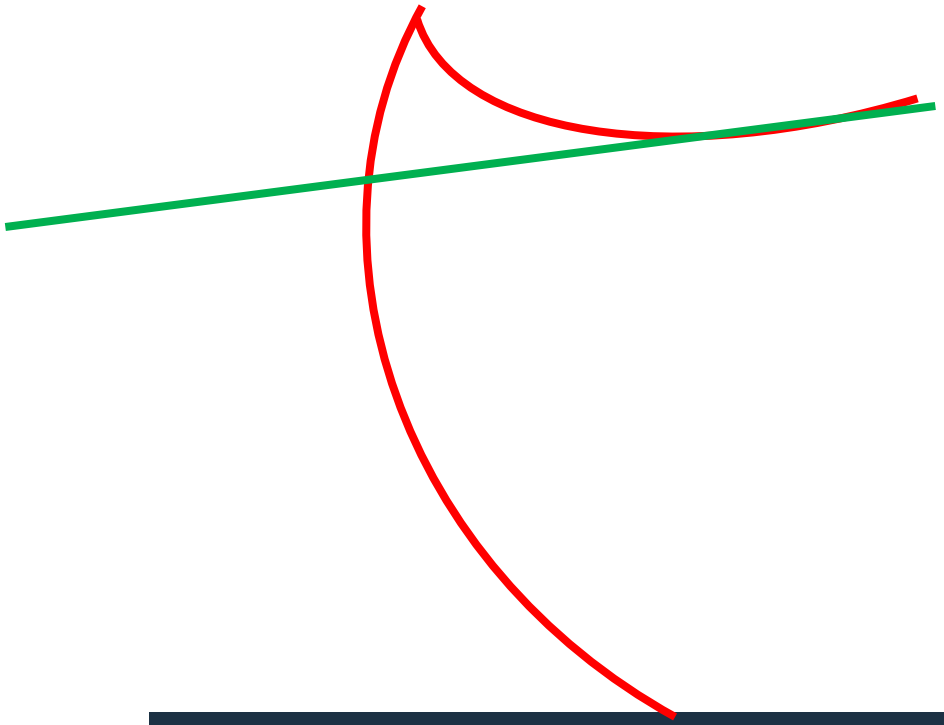
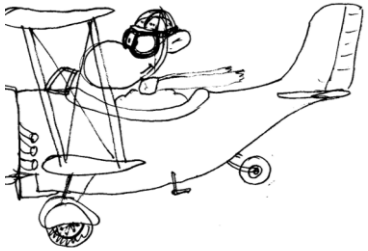
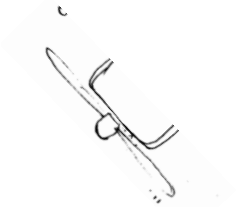




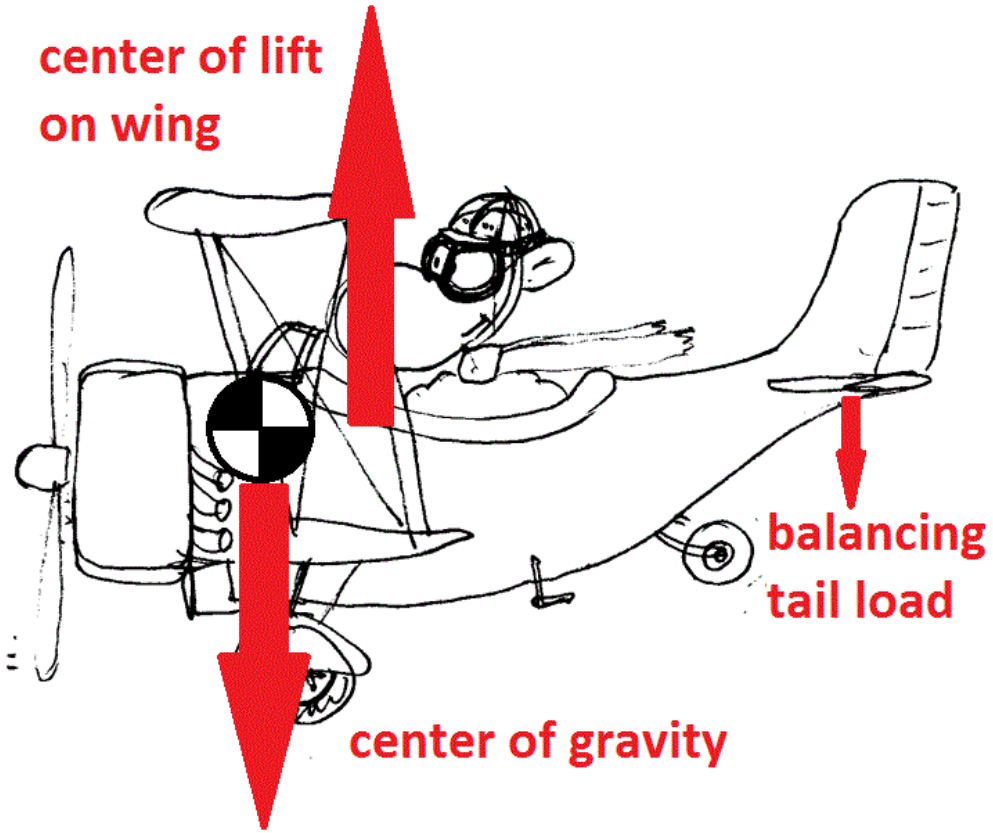


Full control of the flight attitude

What is the benefit of gyros

- Stable flight due to aerodynamic design

=> Hazardous drag on horizontal stabilizer



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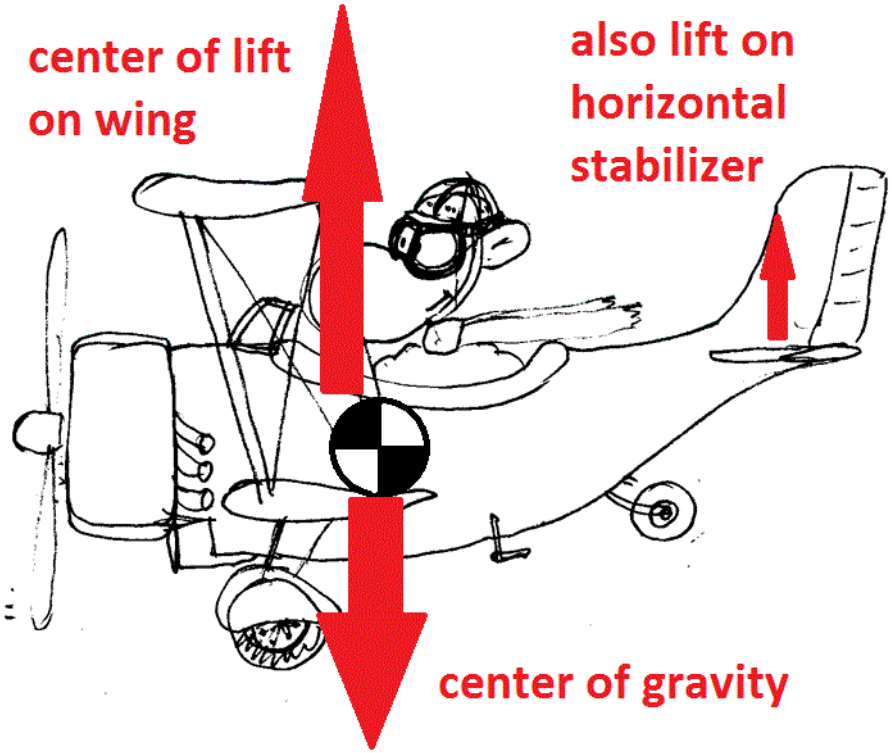

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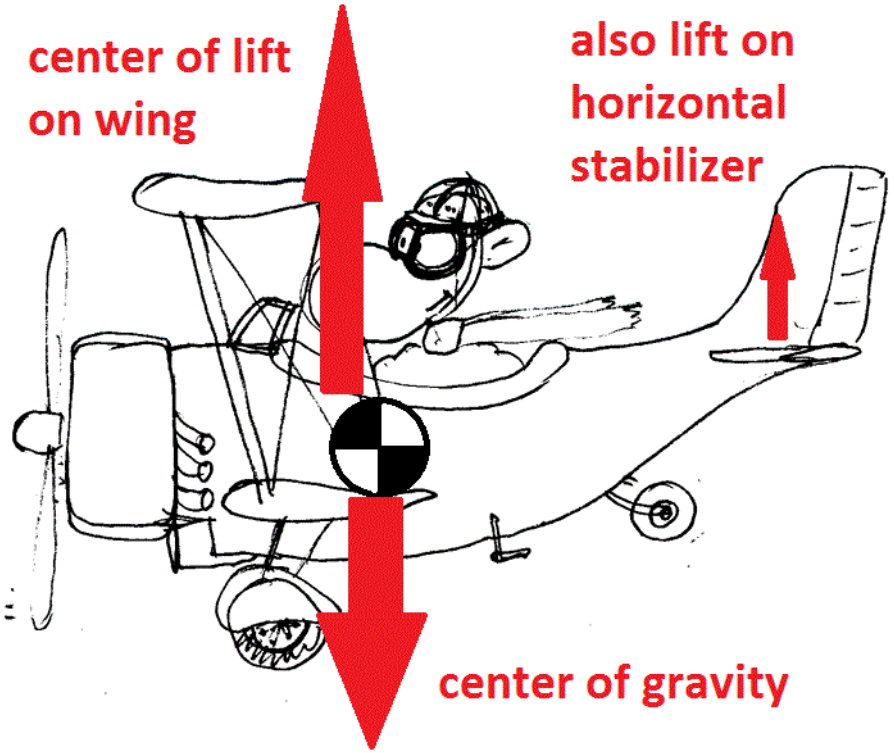
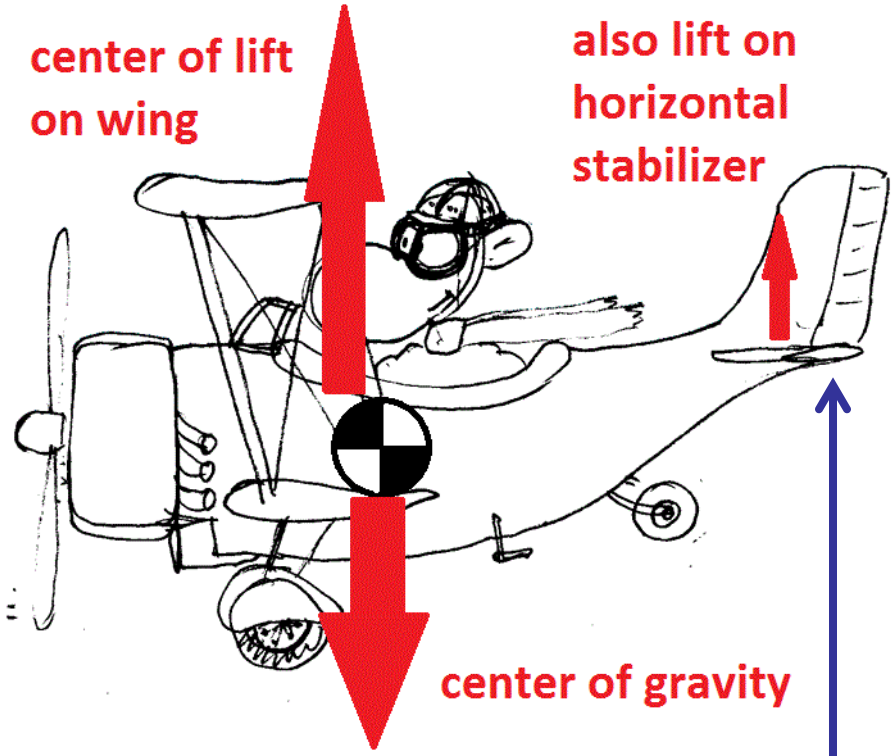


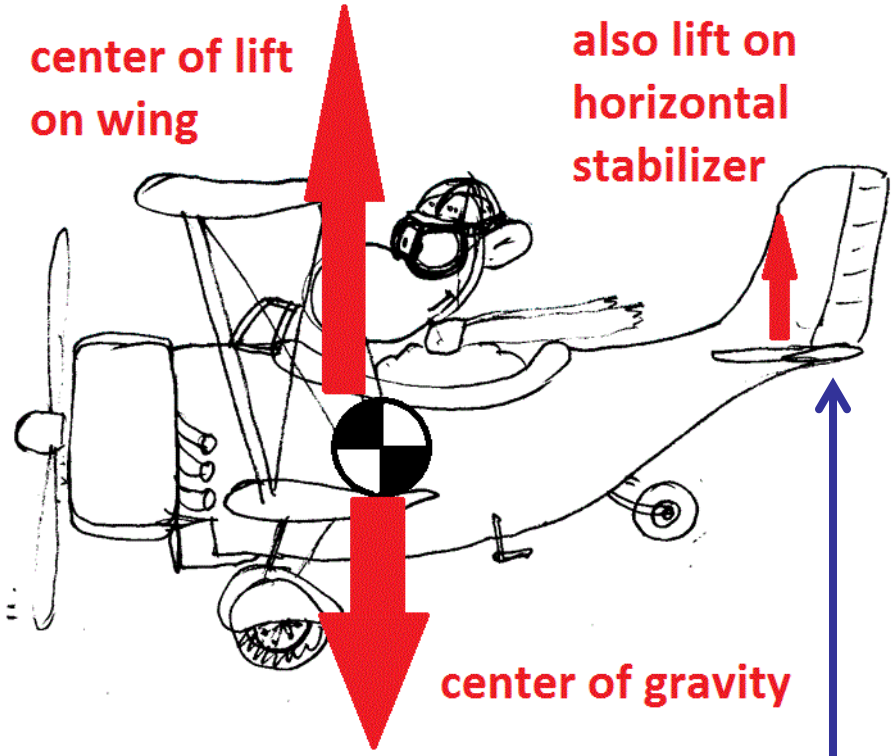
Gyro - sensor

What is the benefit of gyros



Gyro - sensor → Electronic Flight-Control

What is the benefit of gyros



Gyro - sensor → Electronic Flight-Control

⇒ Stable flight due to intelligent electronics

What is the benefit of gyros

- More comfort with less workload for the pilot
- More safety during flight on unforseen happenings or environmental influence
- Optimising aircrafts and technology for better results
- More possibilities – going to the edge of technology

Automatic Flight Control

Automatic Flight Control

- Taking workload from the pilot by the use of intelligent systems during flight
- Optimising the performance of aircrafts
- New Tasks on top of aerodynamics:
  - Research of accurate sensor technologies
  - Development of autopilot algorithm
  - Adjustment of parameters

Automatic Flight Control

More Sensor values

- angular rate of all 3 axis
- G-force on 3 axis
- magnetic heading
- GPS data
- air data like speed, altitude, climbrate, air temperature,…

Automatic Flight Control

More Sensor values

- angular rate of all 3 axis
- G-force on 3 axis
- magnetic heading
- GPS data
- air data like speed, altitude, climbrate, air temperature,…

Send to pilot via backchannel to give more information about flight attitude

Automatic Flight Control

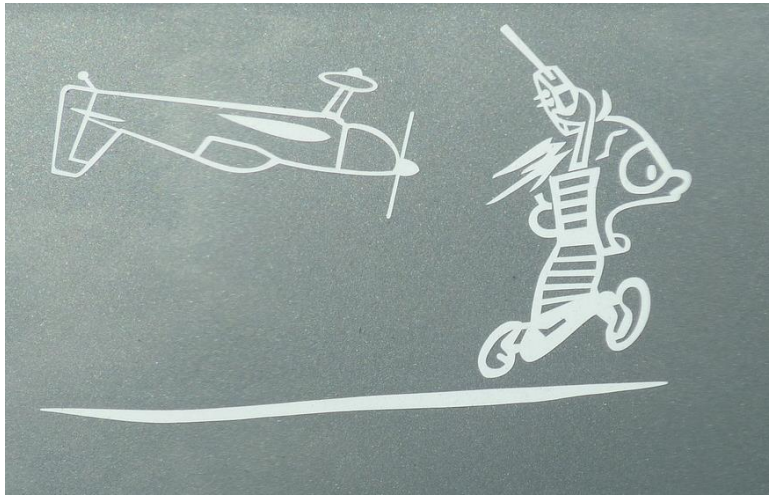
More Sensor values

- angular rate of all 3 axis
- G-force on 3 axis
- magnetic heading
- GPS data
- air data like speed, altitude, climb rate, air temperature,…

Lots of

mathematical operations

Watching the plane flying the programmed task



Automatic Flight Control

What does this mean to the FAI competition classes?

- Aerodynamic design will change
- „Feeling the plane“ will be replaced by feedback of sensor values
- Pilot skills will be replaced by intelligent electronics
- The most sophisticated flight control system will win

What could weatronic do

- We go on producing systems on the edge of technology and support all kind of aeromodellers
- Also we want to provide a system, which is following competition rules of different classes
- We want to give the pilots the chance to take part on any competition by using our system without beeing suspected of using technologies that are standard for weatronic but not allowed during competition
- We suggest „FAI Mode“ for giving the pilot the chance to confirm compliance to the rules

Questions and Answers

What do you want to know further?

Thank you for your attention

Sources for pictures:

- http://wiki.rc-heli-fan.org/images/3/31/Mechanischer_Kreisel.jpg
- http://images.fotocommunity.de/bilder/luft-und-raumfahrt/modellflug/modellflug-bba7d64d-2ec8-4991-96f9-8385c811e4a9.jpg
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