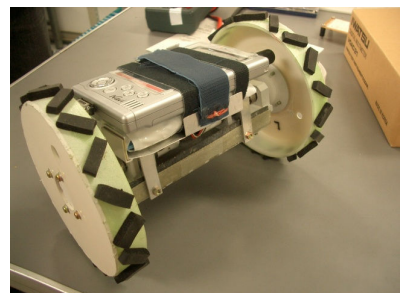




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## Concept

- **IDEA : (philosophic mean)**
  - The source of “idea”
  - The word “idea” is derived from IDEA
- In case some troubles happen in space, from the earth . . .
  - ***Impossible*** to repair hardware
  - **Possible** to update software



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# **Characteristics of Our Rover**

- ① **parachute cut-off system**
- ② **software program in PDA  
(GPS data estimation)**



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## **① parachute cut-off system**

- **system**
  - **Two parts are connected by pin with spring.**
  - **Nichrome wire cuts off the fishing gut.**



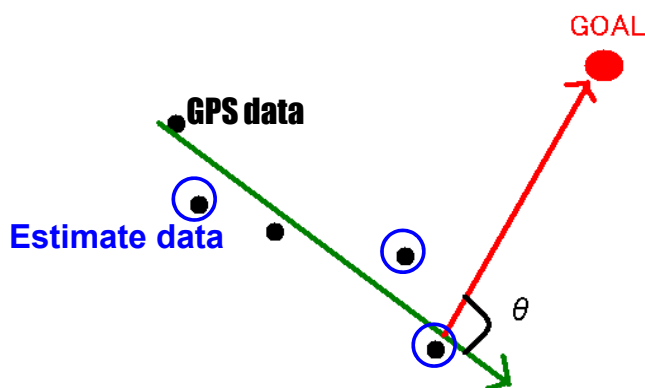
## ② software program in PDA

### **[ Advantage of PDA ]**

- Programming Language C# / OS Windows CE

### **[ feature ]**

- Algorithm of estimating self-location
  - Cope with GPS data get only 2~3 per 10~30 seconds
  - Caluculate  $\theta$  of many GPS data. turn  $\theta$  per second.



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## 1st Flight

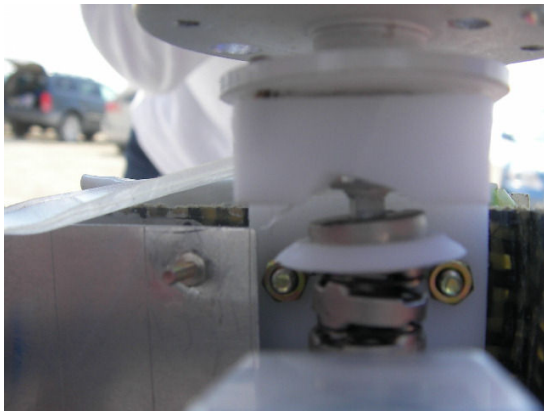
**Dick & Tom' rocket carried up our rover.**



**Thank you, Dick & Tom.**

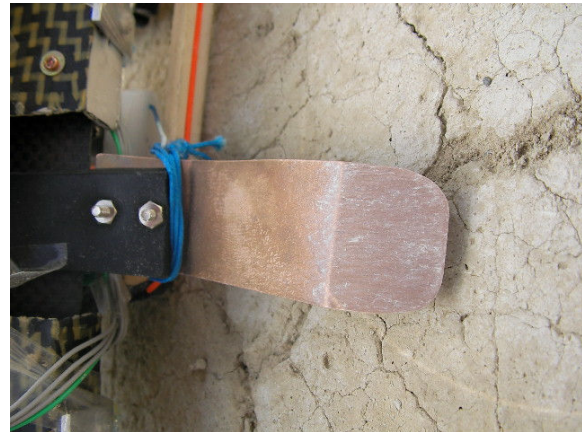
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# Results of 1st Flight



· This part was broken, so motor couldn't work.

· Parachute's rope entangled stabilizer



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# Results of 1st Flight



Lab.



## 2nd Flight

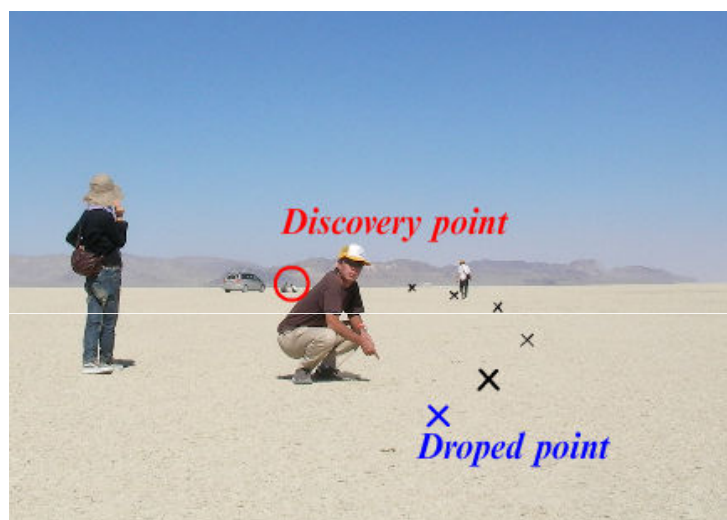
- **Tom Rouse's rocket carried up our rover.**



**Thank you , Tom.**

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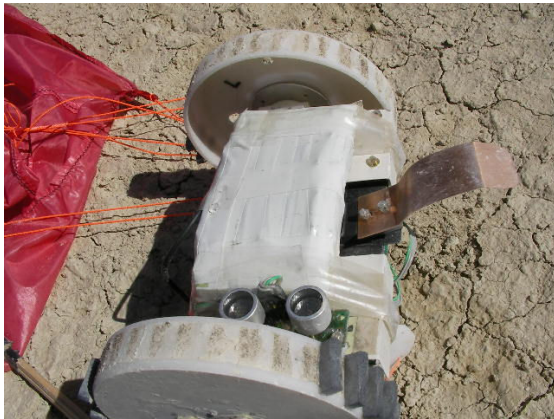
## Results of 2nd Flight



- **PDA still worked even in hard situation.**
- **The rover was flung strongly on the ground many times by the wind.**

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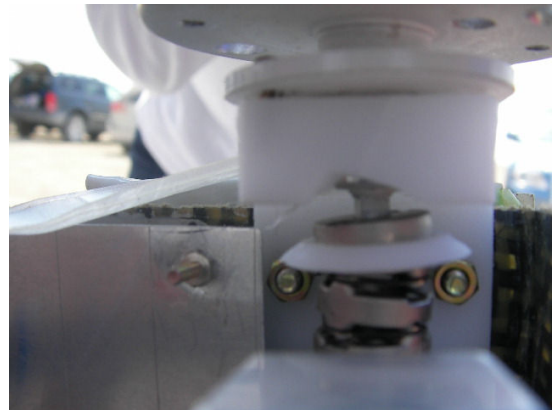
## Results of 2nd Flight



**· Wheel's rubber was away off**

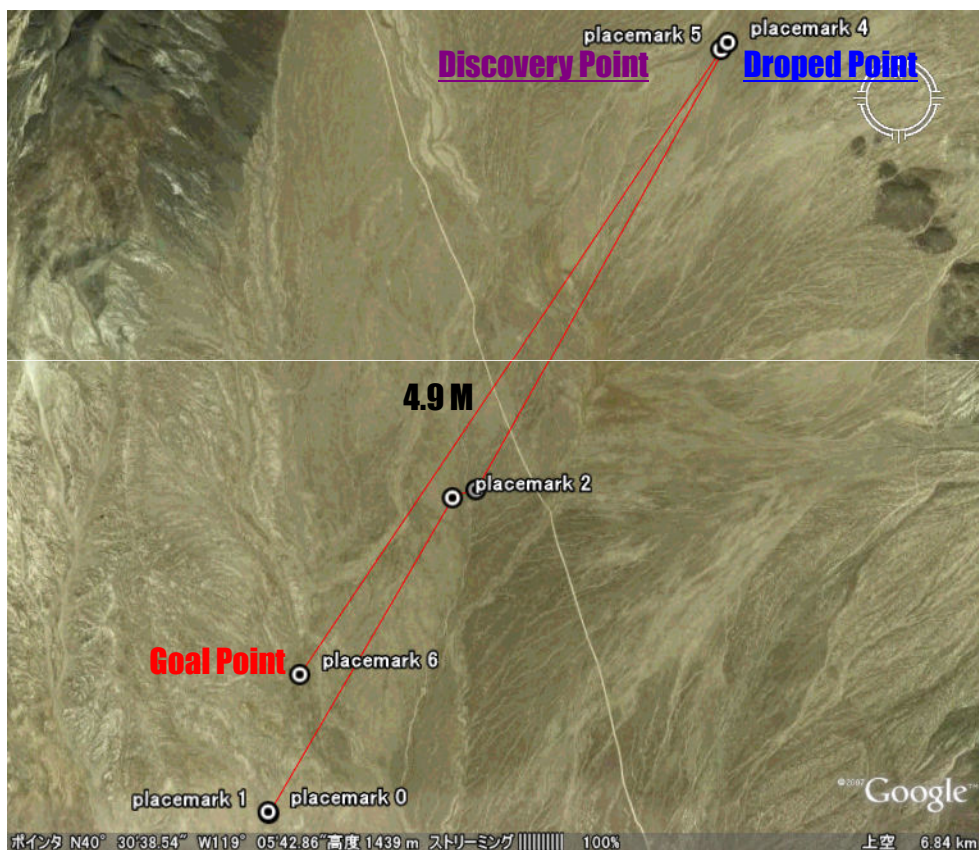
**【 Others 】**

**· Wheel joint (part) was screwed.**



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## Results of 2nd Flight



Lab.



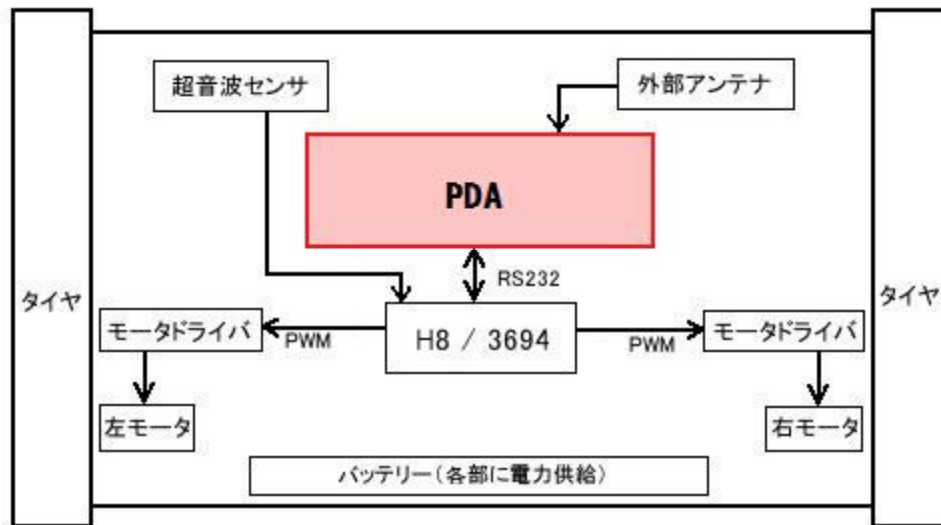
**Thank you for all ARLISS staffs and  
aero-pack members!!**

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# Appendix

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# Structure of Our Rover



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# Structure of Our Rover

## Parts of IDEA

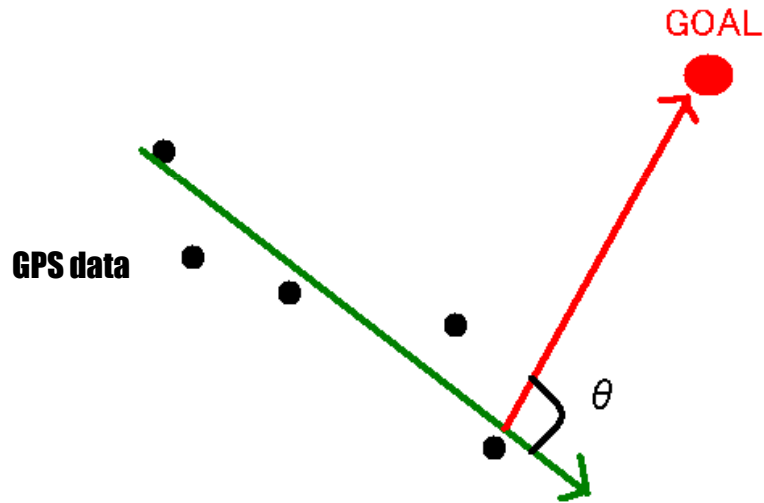
<b>PDA</b>	<b>inView</b>
<b>MPU</b>	<b>H8/3694</b>
<b>Outside antenna of GPS</b>	<b>INNVANTt</b>
<b>Sensor of Supersonic wave</b>	<b>T40-16/R40-16</b>
<b>Motor draiver</b>	<b>TA7279P</b>
<b>Motor</b>	<b>栄43 CSD</b>
<b>Tire</b>	<b>polyacetal copolymer resin</b>
<b>Battery</b>	<b>rechargeable lithium-ion cell</b>

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# Turn Method

Caluculate  $\theta$  of many GPS data. turn  $\theta$  per second.

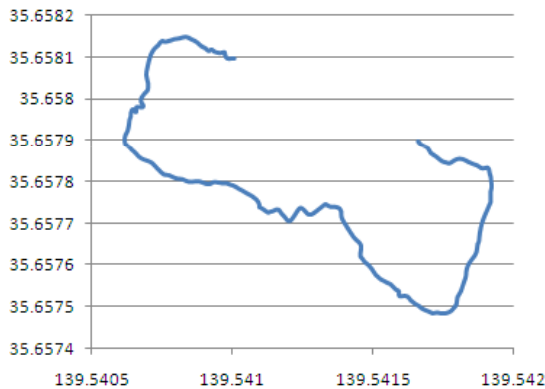


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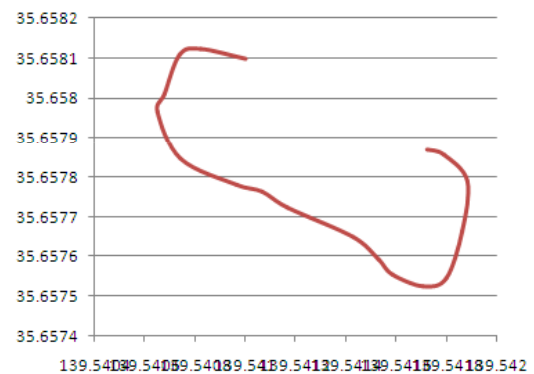
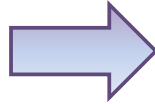
# Future Works

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# Algorithm of estimating self-location



**Origin data**



**Average data**

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## ② software program in PDA

### **【 Advantage of PDA 】**

- Programming Language **C#**
- OS **Windows CE**

### **【 feature 】**

- **Algorithm of estimating self-location**
  - Cope with GPS data get only 2~3 per 10~30 second
- **Same port by PDA→H8、H8←PDA communication**
  - Cope with sender error

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