

Appendix N

TCDT

Distribution and maintenance

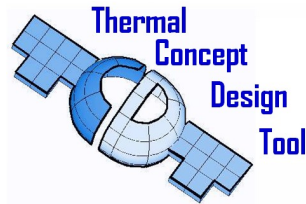
Andrea Tosetto Matteo Gorlani
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Harrie Rooijackers
(ESA/ESTEC, The Netherlands)

Abstract

The activities of the 3rd M&D year will be described by focusing on new developments and installation adaptations for ESTEC CDF. A demonstration of the beta TCDT ver.1.3.1 with the new GUI and the 3DViewer with the satellite in orbit will be given. A presentation of a stochastic/parametric analysis by means of the parametric engine of the TCDT will be given in order to demonstrate the usefulness of the parametric approach introduced with version 1.3.0

Thermal Concept Design Tool Distribution & Maintenance



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Sheet 1

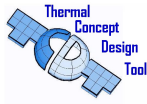


Overview

- **Background**
- **Version 1.3.0 Improvements**
- **Next Version Improvements**
 - **Required by the Thermal Community**
 - **Required by CDF – ESTEC**
- **Maintenance Activity**

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Sheet 2





Background

3° YEAR OF DISTRIBUTION & MAINTENANCE STARTED APRIL 2009

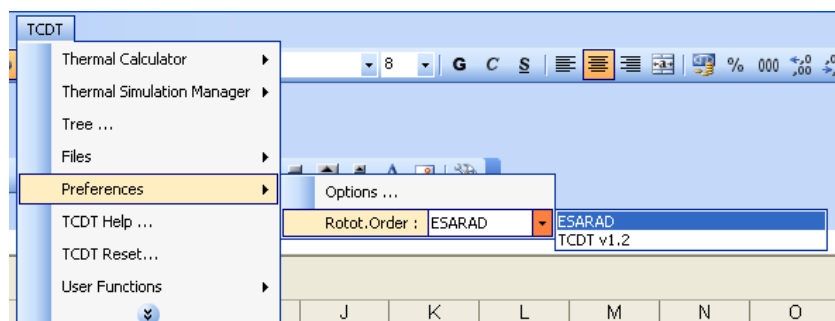
- TCDT is distributed FREE of CHARGE to the European Thermal Community
- TCDT web pages available for download, PR, FR
- TCDT is regularly maintained by BLUE
- Small developments are regularly implemented to improve operability
- TCDT version 1.3.1 will be available before the end of 2009

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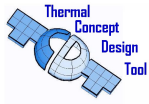
TCDT 1.3.0 Improvements

- Rototranslation order selection :
 - ESARAD Default
 - TCDT v1.2.x



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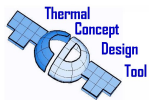


TCDT Improvements (1/7)

IMPROVEMENTS derived from the last year survey

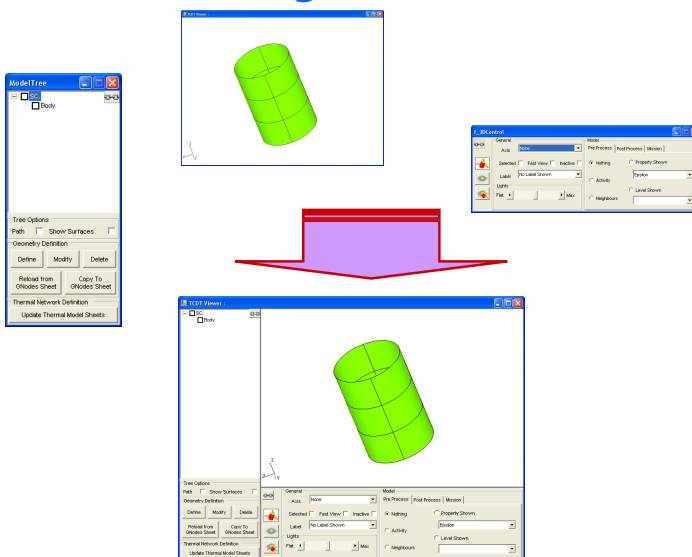
- Improvement of GUIs
- S/C Attitude Visualisation on Orbit
- Nodes and Conductors management

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TCDT Improvements (2/7)

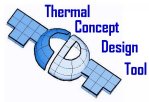
Integration of Model related Controls



- Anchoring
- Show/Hide windows

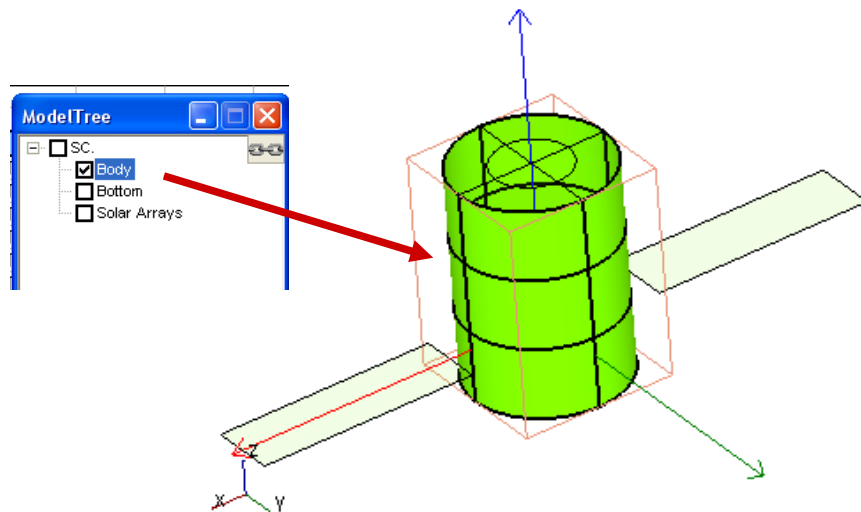
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TCDT Improvements (3/7)

Selected element/assembly main axis and containing box

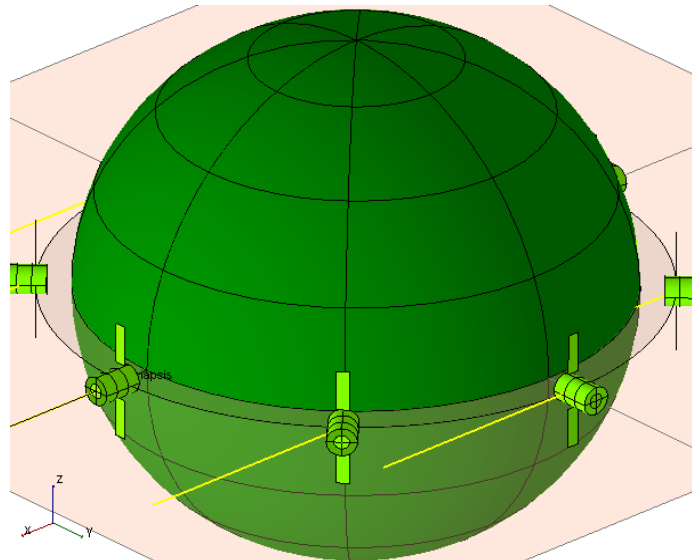


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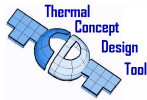
TCDT Improvements (4/7)

Satellite Attitude visual check



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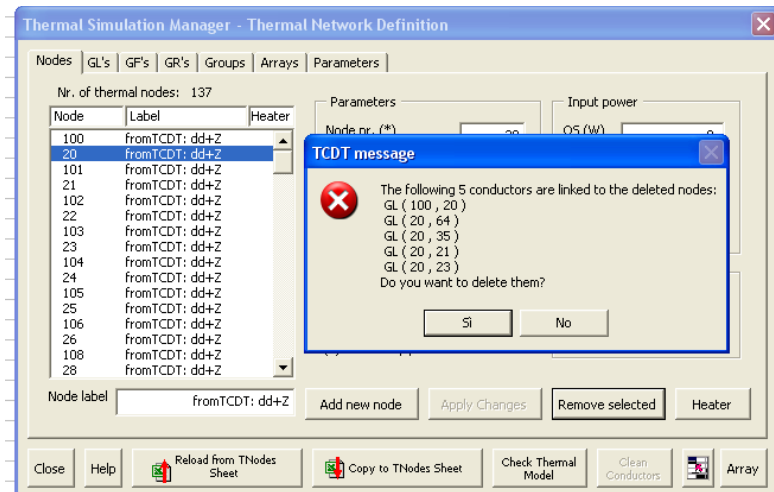




TCDT Improvements (5/7)

Improved Nodes deletion

Automatic deletion of the thermal network conductors after a nodes deletion.



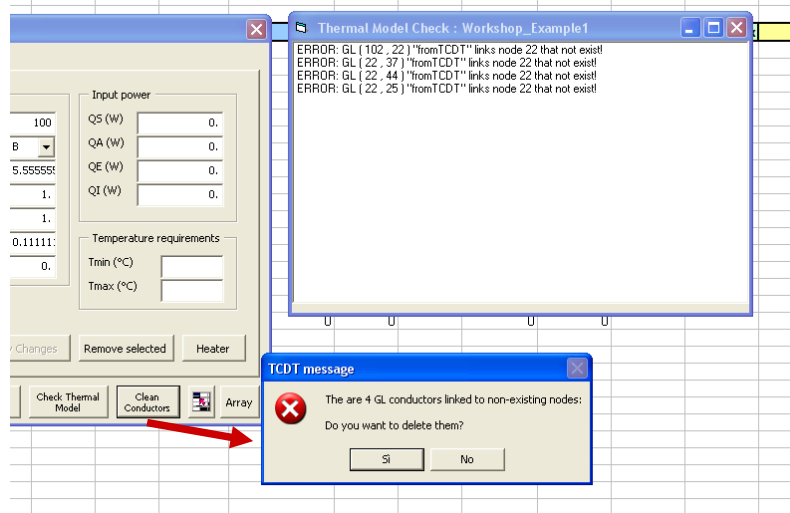
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TCDT Improvements (6/7)

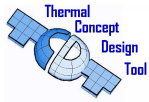
Improved Model Check

Automatic deletion of the thermal network conductors not linked to any nodes (after checking the network).



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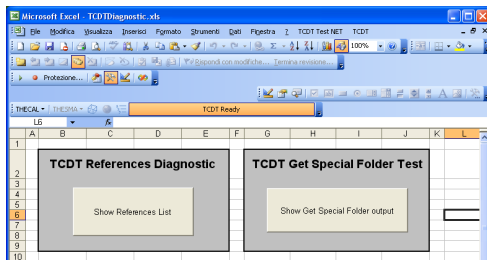




TCDT Maintenance Activity (1/2)

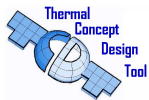
Bugs Diagnosis

- A Diagnostic tool is prepared to be sent to users that encounter problems
- The tool analyze the status TCDT Addin and reports it.
- The tool is an excel file.
- Already successfully used



- Virtual Machines utilization
 - Excel 2000
 - Excel 2003
 - Excel 2007 (future)

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TCDT Maintenance Activity (2/2)

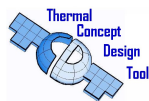
BUGS CORRECTION

Geometry generator :

- The box surfaces +Y and -Y are rotated of 180 degrees when the rototranslations order is "ESARAD"
- Solution: It will be corrected in the next TCDT version

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TCDT Tips

With the TCDT is possible to :

- **Model Visual Check**
- **Postprocess results**
- **Model Parameterization**
- **Parametric Analysis**

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TCDT Team

DISTRIBUTION & MAINTENANCE

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Sheet 16



Microsoft Excel - Workshop_Final_Power.xls

File Edit Format Tools Data Window Format Data TCDT Test NET Parameters TCDT

100%

Digitare una formula

Protezione...

THECAL - THEDES - TCDT Ready

L12 270

TCDT Geometric Nodes

Node W's			Position Properties				Geometric Properties						Bulk Properties			Sidel Activity		Solar Optical Properties Sidel:		IR Optical Properties Sidel:			
Side1	Side2	Label	Rot Z	Tr X	Tr Y	Tr Z	Type	Dim1	Dim2	Dim3	Dim4	Dim5	Dim6	C	K	Density	sc	τ	spec p ratio	sc	τ	spec p ratio	
1	BECH																						
2	1900	1900	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
3	1910	1910	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
4	1920	1920	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
5	1930	1930	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
6	1940	1940	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
7	1950	1950	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
8	1960	1960	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
9	1970	1970	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
10	1980	1980	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
11	1990	1990	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
12	2000	2000	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
13	2010	2010	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
14	2020	2020	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
15	2030	2030	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
16	2040	2040	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
17	2050	2050	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
18	2060	2060	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
19	2070	2070	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
20	2080	2080	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
21	2090	2090	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
22	2100	2100	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
23	2110	2110	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
24	2120	2120	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
25	2130	2130	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
26	2140	2140	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
27	2150	2150	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
28	2160	2160	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
29	2170	2170	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
30	2180	2180	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
31	2190	2190	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
32	2200	2200	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
33	2210	2210	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
34	2220	2220	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
35	2230	2230	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
36	2240	2240	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
37	2250	2250	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
38	2260	2260	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
39	2270	2270	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
40	2280	2280	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
41	2290	2290	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
42	2300	2300	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
43	2310	2310	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
44	2320	2320	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
45	2330	2330	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
46	2340	2340	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
47	2350	2350	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
48	2360	2360	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
49	2370	2370	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
50	2380	2380	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
51	2390	2390	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
52	2400	2400	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
53	2410	2410	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
54	2420	2420	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
55	2430	2430	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
56	2440	2440	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
57	2450	2450	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
58	2460	2460	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
59	2470	2470	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
60	2480	2480	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
61	2490	2490	Body	0	0	0	0	Cylinder	0.7	270	360	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
62	2500	2500	Body	0	0	0	0	Cylinder	0.7	0	90	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
63	2510	2510	Body	0	0	0	0	Cylinder	0.7	90	180	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
64	2520	2520	Body	0	0	0	0	Cylinder	0.7	180	270	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
65	2530	2530	Body	0	0	0	0	Cylinder	0.7	270	360	0.1666667	0.8333333	1	1	1	1	Yes	0.8	0	0	0.9	0
66	2540	2540	Body	0	0	0	0	Cylinder	0.7	0	90	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
67	2550	2550	Body	0	0	0	0	Cylinder	0.7	90	180	-0.5	0.1666667	1	1	1	1	Yes	0.8	0	0	0.9	0
68	2560	2560	Body	0	0	0	0	Cylinder	0.7	180	270	-0.5											

