Grid Activities Update in USM

Southeast Asia 06

organized by

NCHC
財團法人國家實驗研究院
國家高速網路與計算中心
National Center for High-Performance Computing

USM Campus Grid Projects

- Collaborators
    - APSTC in Singapore, bio-grid. Appointed as APSTF.
    - PRAGMA member, Universite de Franche-Comte, France, SEAGF
    - MIMOS, and other local universities
- Gear up collaboration between schools & centres of multidiscipline:
    - Pharmaceutical science, computer sciences, mathematics, aerospace, electrical engineering, Knowledge CT, etc.
- Common USM grid and e-learning portal
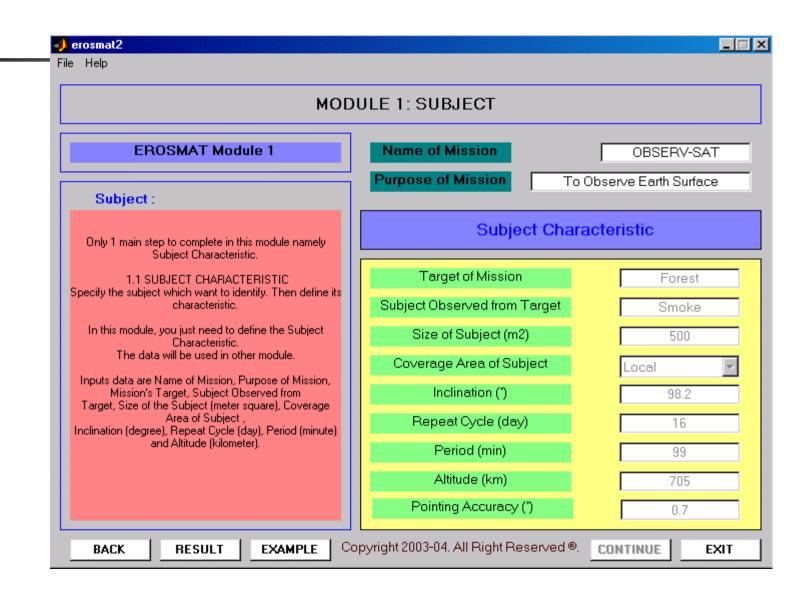
Background

- **The Aerospace Engineering program offered by USM is focusing on these two specializations:**

    - *Aeronautic*: on aircraft design and aircraft subsystems

    - *Astronautic*: on spacecraft design and the technology employed in spacecraft development

R&D Activities

Aircraft Design

Spacecraft Design

Design Optimization

Simulation

Educational Software

Educational Software
Preliminary Mission Analysis Tool (PMAT)

erosmat1

File   Help

Earth Observation Satellite Mission Analysis

WELCOME TO EROSMAT

EROSMAT function is to design satellite preliminary mission

Main Menu

Module 1 : Subject

Module 2 : Payloads

Module 3 : Link Budget

Module 4 : Power & Mass Budget

Module 5 : Spacecraft Bus Analysis

Module 6 : Launch Segment

Module 7 : Ground Segment

Module 8 : Mission Operation

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- Software modules are based on spacecraft mission elements

Preliminary Mission Analysis Tool

erosmat2

File Help

MODULE 1: SUBJECT

EROSMAT Module 1

Name of Mission   OBSERV-SAT

Purpose of Mission   To Observe Earth Surface

Subject :

Only 1 main step to complete in this module namely Subject Characteristic.

1.1 SUBJECT CHARACTERISTIC
Specify the subject which want to identify. Then define its characteristic.

In this module, you just need to define the Subject Characteristic.
The data will be used in other module.

Inputs data are Name of Mission, Purpose of Mission, Mission's Target, Subject Observed from Target, Size of the Subject (meter square), Coverage Area of Subject , Inclination (degree), Repeat Cycle (day), Period (minute) and Altitude (kilometer).

Subject Characteristic

Target of Mission	Forest
Subject Observed from Target	Smoke
Size of Subject (m2)	500
Coverage Area of Subject	Local
Inclination (°)	98.2
Repeat Cycle (day)	16
Period (min)	99
Altitude (km)	705
Pointing Accuracy (°)	0.7

BACK   RESULT   EXAMPLE   Copyright 2003-04. All Right Reserved ®.   CONTINUE   EXIT

Preliminary Mission Analysis Tool

Orbital Elements Module

Preliminary Mission Analysis Tool

Satellite Locator Tool - Page 4a

File   Help

This is the section to

Know more about orbits : Equatorial Radius of Earth
LEO (Low Earth Orbits)-- a = 7,000 km to 8,800
e = 0 (LEO are generally circular orbits), incl = 28 deg

MEO (Medium Earth Orbits)-- a = 21,300 km to 26,
e = 0 (MEO are generally circular orbits)

Would you like to observe 1 satellite
or 2 satellites?

Name of Satellite :   MySat-1

a =   10000   6600   44000   lan =   80   0

e =   0.08   0   0.65   argpe = 20   0

incl = 20   0   180   Note: lan, argpe an
                                         are angles in c

T =   Year   Month   Day   Hour   Minute
      2003   Oct   16th   00   00

Satellite Locator Tool   More Info

Satellite Locator Tool - Page 5a

File   Help

.... And the results!

Ok, when you are at this page,
look down at your taskbar,
there should be a pop-up
window hidding at your taskbar.
Just click on the window
(called 'Figure No.2'),
position 'Figure No.2' beside the
e No.1).
th Figures

ready!

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e.

r 3D view of
e right-most
u bar, and
ate the figure.

Figure N

File   Edit   View   Insert
Tools   Window   Help

GO!

Figure No.1: The World Map displaying the location of the satellite.
Horizontal axis displays East Longitude in degrees,
Vertical axis displays Positive North Latitude in degrees.

Period (in min.) =   165.8669

T =   16-Oct-2003 00:00:01   t =   16-Oct-2003 23:59:37

Satellite Locator Tool   More Info   << Back   Next >>   EXIT

Educational Software

SIMULATION OF A ROCKET'S BALLISTIC TRAJECTORY WITH FLIGHT PATH PREDICTION MODEL AND TARGET SAFETY ENVELOPE

Collaborative
μElectronic
Design
Excellence
Centre
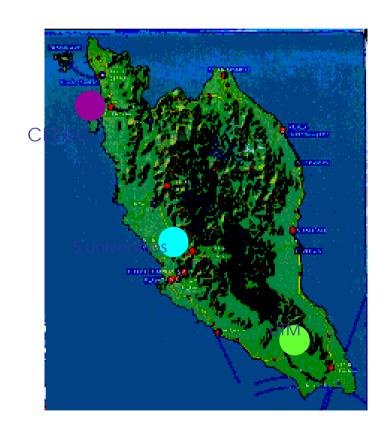
Othman Sidek
Director

Coordination of Resource Sharing

- ## Seven Universities
  - Sharing usage of EDA tools (possible application of GC)
  - Sharing of Testing Equipment/Analysers

- ## Two Silicon Foundries
  - MPW facility for the 7 univs

EDA Tool Cluster

- Cluster (2x2U Rack) -CEDEC
  - Cadence
  - Synopsys
  - Mentor Graphics
  - MEMS design
  - System Level Design
- Possible other location at ISP Data Centre
  - Central & South Region

Molecular Simulation & Drug Discovery Group

- **Subset of MBBS Group**
- **Members:**
  - Habibah A Wahab (Pharm Tech., PPSF)
  - Nornisah Mohamed (Pharm. Analysis, PPSF)
  - Shaida Fariza Sulaiman (Phytochemistry, PPSK)
  - Amin Malik Shah Abdul Majid (Pharmacologist, PPSF)
  - Suriati Muhamad (Microbiologist, PPSK)
  - Rashidah Abdul Rahim (Enzymologist, PPSK)
  - Suhaini Ahmad & Fitriah Abdul Rahim (Research Officers)
  - 9 PhD & 6 MSc (Postgraduates)

MSD RESEARCH FOCUS

- **Structural Bioinformatics:**
  - Protein-structure prediction
  - Understanding protein-ligand interactions (Molecular Dynamics/ Docking Simulation)
  - DNA-Ligand interactions (Molecular Dynamics/ Docking Simulation)
- **Drug Design & Discovery**
  - Screen Malaysian Natural Products for Biological Activity
  - Screen for antiangiogenic and proangiogenic compounds
  - Pharmacophoric/ QSAR
- **Molecular Simulation (lipid membrane, membrane diffusion, membrane protein, ribosome/RNA)**

INTRODUCING NAPIMm$^©$

- **COMPUTATIONAL PLATFORM**
  - Grid enabled molecular modelling platform
  - Automatic docking & reverse docking server
  - MD simulation server
  - Protein-structure prediction server
- **DATABASE SYSTEM: NADI$^©$**
  - NADI-CHEM$^©$
  - MNATCHEM$^©$
  - NADI-RA$^©$
  - NADI-HERBS$^©$

NaDI©: Features

- **COPYRIGHTED DATABASE SYSTEM**
- Comprehensive 3D chemical structure Database of natural products
  - Inclusive of chemical properties and biological activities references
  - 2D structures
  - 3D structures ready for *in silico* drug screening
- Drug Receptor Database –
  - provide drug receptor and disease information.
  - 3D structure of drug target
- Herbal Monographs
  - Comprehensive description about traditional uses of Malaysian and Chinese medicinal plants