



**Responsive People Build Responsive Ground Systems**

# The Interim: Until You Achieve an Operationally Responsive Ground System

**Presented By Bob Wendlandt**

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# Achieving an Operationally Responsive GDS



Responsive People Build Responsive Ground Systems

- Who we are:
  - The Integration Test and Deployment (ITD) Team
- About our GDS
  - Unix based Solaris system
  - Multi-mission system
- How we achieve a responsive ground system
  - The GDS's perspective
  - The project's perspective
  - The user's perspective
  - Our team's perspective



# Achieving an Operationally Responsive GDS



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## Who We Are:

- The Integration Test and Deployment Team
  - Adapt, Integrate & Test the GDS for a project
    - Customize GDS workstation environment
    - Integrate project tools and scripts
    - Provide GDS support to project staff
      - » Engineers, scientists, developers, testers, managers
  - Teaming
    - Team Interaction
    - Team is greater than the sum of all its members



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## About Our GDS

- Development began in 1986
- Adaptation continues in 2008
- Unix based Solaris system
- Flexible Multi-mission ground data system



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## How We Achieve A Responsive GDS

- Perspectives Of The Ground System
  - The GDS perspective
  - The project's perspective
  - The user's perspective
  - The team's perspective



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- The Ground System Perspective:
  - Multi-mission environment
  - Reliable
  - Adaptable
  - Mature
  - Flexible
    - Flexibility means Options
    - Options mean Variability
    - Variability means More to Remember
    - More to Remember means Forgetting Something
    - Forgetting Something can lead to Mistakes



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- The Project's Ground System Perspective:
  - Single-mission environment
  - Reliable for the mission
  - Adaptable to mission's needs
  - Usable by mission engineers
  - Flexible to mission's changing requirements
    - Spacecraft 2 / MER-A / Spirit
    - Spacecraft 1 / MER-B / Opportunity



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- The User's Ground System Perspective:
  - “I just want to see my data”
  - “I do not want to be a GDS expert”
  - “What was that command again?”



# MER's Drop-Down Menu



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GDS Tools V1.2	
MER-A Tools	
MER-A DMD	▽
mer_evr	▽
evr_view	▽
packet_watch	▽
product_watch	▽
TDS Query Tools	▽
MER-A BC Flow	▽
New Window	▽
MER-B Tools	
MER-B DMD	▽
mer_evr	▽
evr_view	▽
packet_watch	▽
product_watch	▽
TDS Query Tools	▽
MER-B BC Flow	▽
New Window	▽
Generic Tools	
New Window	▽
Window Dump	▽
Screen Dump	▽
<input checked="" type="checkbox"/> Snapshot Dump	
Mission Info	▽
DOM GUIs	▽
OSS Tree	
MER Seq Arch Lib	
Plot Tools	▽
Utilities	▽
All MER BCs	
MER Clock	
MER LST Times	
Time Conversions	▽
CIP	
MCT Tools	▽

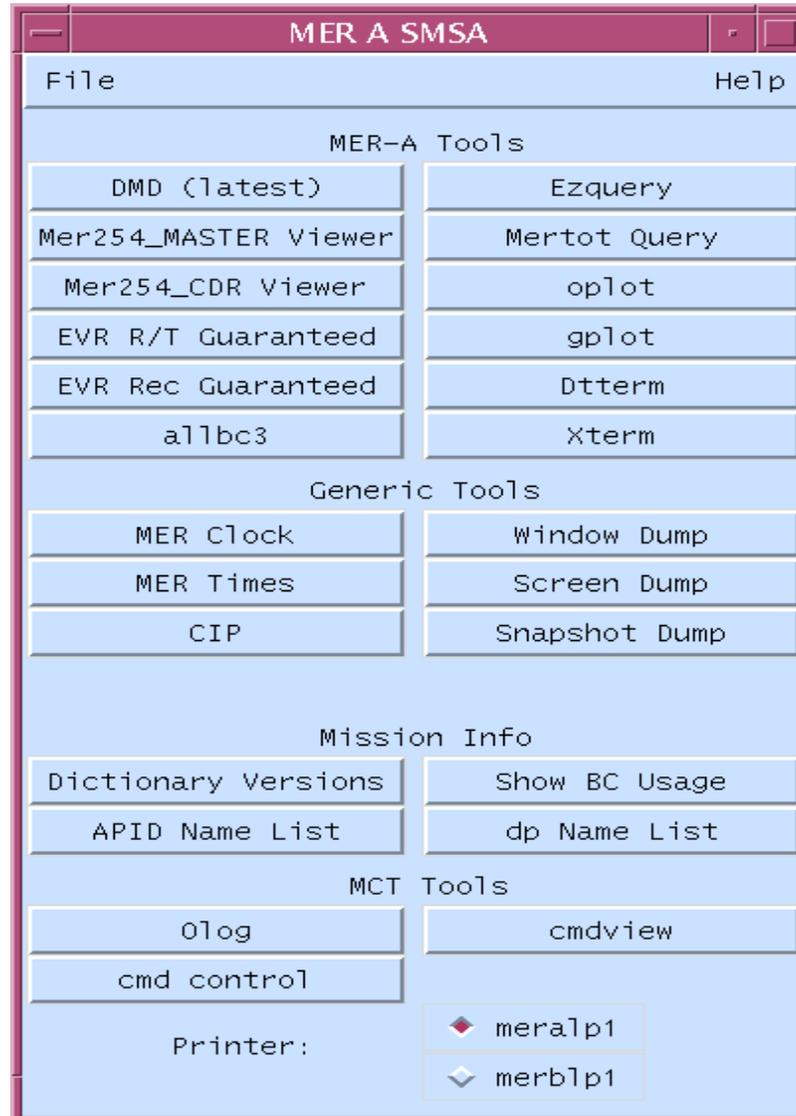
Mer254_MASTER_QueryServer
ezquery mer2
Plot Tools
Mertot Query
TDS Viewer mer2 MASTER
TDS Viewer mer2 CDR
TDS Viewer ODY MASTER
Optional ezquery Printers
ezquery mer2 meralp1
ezquery mer2 merblp1



# MER's Remote Menu



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# Victor's Magic Button



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File Help

Source: UCONX (selected), SIM PORT (no uconx) | String Mode: Single (selected), Dual | Uconx Name: msapfsw\_gsaw2008 | Radio/SDST: 1, 2, 3, 4, TZ (selected), LV | Test ID: id

Cmd DB: Delivered: 4.0.0EM\_20080130\_E | User Built: Browse... | Path: /GSAW2008/cmd\_db/4.0.0EM\_20080130\_E

Tlm DB: Delivered: msap\_4.0.0\_20080204\_E | User Built: Browse... | Path: /GSAW2008/tlm\_db/msap\_4.0.0\_20080204\_E

Evr DB: Delivered: evr\_4.0.0\_20080130\_C.EvrDefTable | User Built: Browse... | Path: /GSAW2008/evr\_db/evr\_4.0.0\_20080130\_C.EvrDefTable

Downlink Uplink

NTTI  TIS  MPCS

Frame Size: Large (selected), Small

Frame Type: ReedSolomon (selected), Checksum, Turbo: 1/2, 1/3, 1/6

TIS Decoding:  reed\_solomon on  checksum on  turbo on

TIS Derandomize: Off (selected), On

DMD  DQM

```
start_msap_gds downlink -tti -input_type uconx -input_host localhost -input_name
msapfsw_gsaw2008 -uconx_port 4 -frame_size large -frame_type ReedSolomon -tis
-tlm_db /GSAW2008/tlm_db/msap_4.0.0_20080204_E -tis_ccitt -tis_reed_solomon -tis_turbo
-logdir /GSAW2008/archive/2008/02/06/ -datadir /GSAW2008/archive/2008/02/06/ -bc
MSAPGSAWB0 -decode_tbl /GSAW2008/evr_db/evr_4.0.0_20080130_C.EvrDefTable -stoptag
9527 -testid id
```

Start DOWNLINK

Online Tlm DB Packet Watch MSAP EVR MSAP DP Stop

File Locations Info Tools Build User cmd DB Build User tlm DB Build User evr DB

Tool Info: SFOC Tool Info, DMD Info, Build User cmd db Info, Build User tlm db Info

Mission Info: Workstation Info, FSW VC Info

Running on msap\_fsw\_GSAW2008 Powered by ITD

Victor's Magic Button



# Achieving an Operationally Responsive GDS



Responsive People Build Responsive Ground Systems

- Our Team's Ground System Perspective
  - Our team is responsive to:
    - The system - We defend it
    - The project - We pursue project success
      - Provide GDS support
      - Work in a constantly changing environment
        - » Office (both ours & user's), labs, testbeds, meeting rooms
  - The user - We support them
    - Tasks: Queue vs. Stack Driven
  - The team - We support each other



# Map Of JPL



Responsive People Build Responsive Ground Systems

Offices  
(Various)

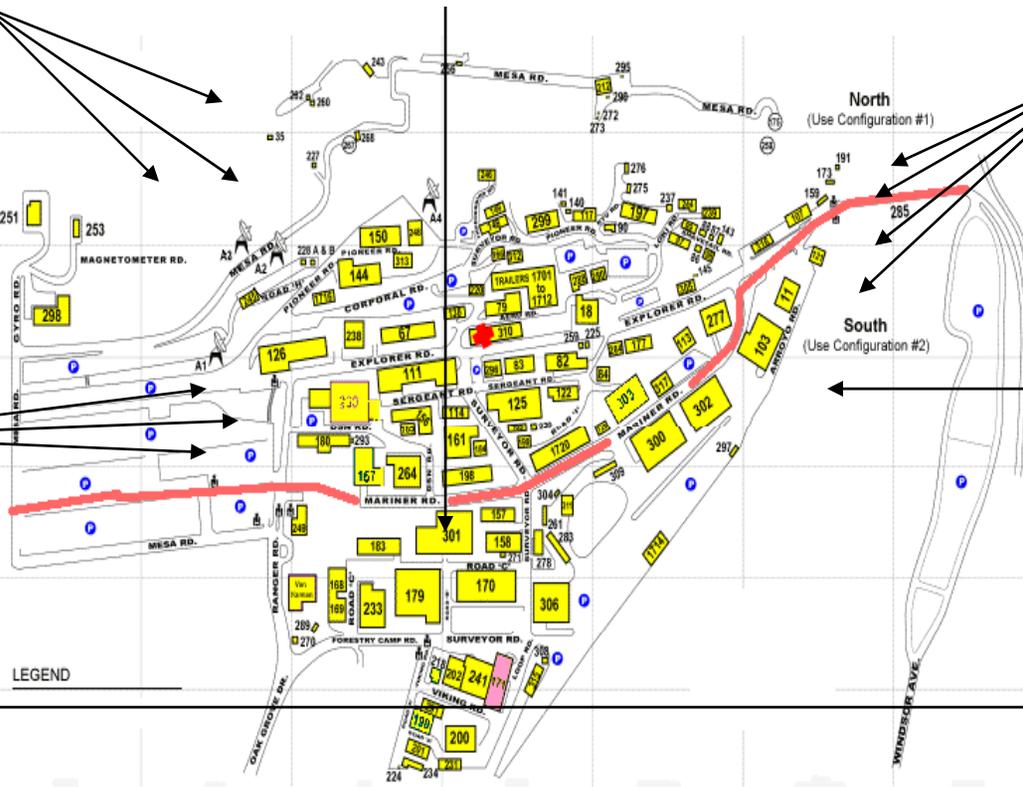
OEL Lab

Meeting  
Rooms

Testbeds

ATLO

KSC





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## To Achieve A Responsive GDS

- A key component for a responsive ground data system is responsive people that are able to hear the heartbeat of a project's needs and respond to it's ever changing requirements.