# Interactive Scenario Builder 3™

Builder is an interactive, three dimensional, Radio Frequency (RF) Tactical Decision Aid (TDA).  Building on over two decades of research and heavy interaction with the fleet, the latest version of Builder is targeted toward war fighters, providing insight into the complex and highly dynamic RF environment within which they operate.

Builder is a computer simulation tool that provides insight into and visualization of the RF capabilities of platforms in addition to providing geo-spatial and temporal situation awareness (SA). Builder models communication and radar systems by calculating one-way and two-way RF propagation loss.  It incorporates complex antenna pattern and radar cross section (RCS) pattern data as well as the effects of meteorology, terrain, environment, and countermeasures when computing power level results.  It visualizes many different NGA map products including CADRG and CIB, enhancing the geo-spatial SA of a user. Builder can be used as a pre-mission planning, real-time SA, and as an after-action debriefing tool.

Builder is designed to work on standard personal computing hardware.  Minimal system requirements include:
> 2 GHz Processor
> 1 GB Memory
> 10-120 GB Disk Space (map dependant)
> Modern 3D Gaming Graphics Card (128 MB RAM)

Builder is currently installed at the following locations:

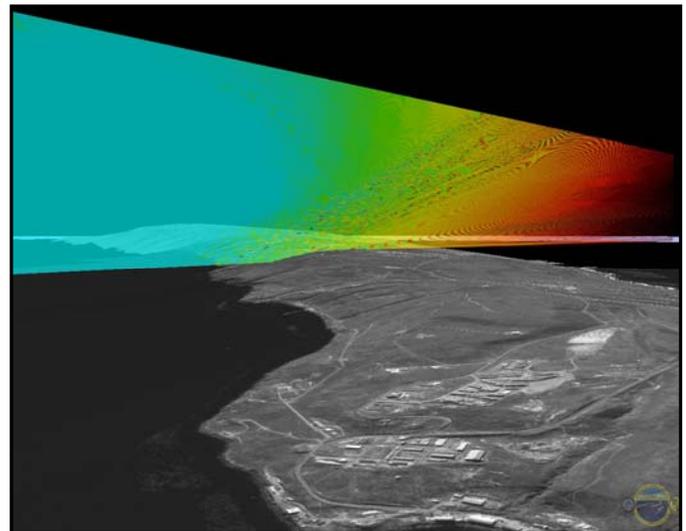| | |
|---|---|
| Air Force Information Warfare Center (AFIWC) | Naval Surface Warfare Command (NSWC) |
| Fleet Information Warfare Center (FIWC) | Space and Naval Warfare Systems (SPAWAR) |
| FIWC Detachment San Diego (FIWCDET) | Tactical Training Group Atlantic (TTGL) |
| Joint Information Operations Center (JIOC) | Air Force Research Laboratory |
| Naval Special Warfare Development Group (NSWDG) | General Dynamics – Advanced Information Systems (GD-AIS) |
| 1st Information Operations Command, US Army (1st IOC) | ComGlobal Systems, Inc. |
| Naval Special Warfare Development Group (NSWDG) | Remcom, Inc. |

Builder models both communication and radar systems incorporating:

- One-way and two-way RF propagation loss (**100kHz – 300GHz**)
- Complex antenna and radar cross-section (**RCS**) pattern data
- Effects of meteorology, terrain (**DTED**), and environment
- Electronic countermeasures such as jamming
- Existing and custom databases to quickly populate scenarios including:
    - **EOB**:  The Electronic Order of Battle database is compiled from Defense Intelligence Agency (DIA) sources. *
    - **CSDB**:  The Combat Support DataBase is supported by Air Force 453 EWS. *
    - **MIDB**: The Modernized Integrated Database from DIA *
    - **NERF:** The Naval Emitter Reference File from FIWC
- Variety of propagation models including:
    - Free Space Loss Calculation (**Freespace**)
    - Advanced Propagation Model (**APM**)
    - Radio Physical Optics Model (**RPO**)
    - Variable Terrain Radio Parabolic Equation Model (**VTRPE**)
    - The Standard EM Propagation Model (**FFACTR**)
    - Terrain-Integrated Rough-Earth Model (**TIREM**)
    - The Damboldt-Lucas Model from PROHET (**DAMBOLDT**)
    - Millimeter Wave Propagation Prediction Model (**MMWProp**)
    - The Irregular Terrain Model (**ITM**)



The propagation information may be overlaid on top of a variety of National Geospatial-Intelligence Agency (NGA) products including:

- **CADRG** – Compressed ADRG (GNC, JNC, ONC, TPC, JOGA, TLM100/50, …)
- **CIB** – Controlled Image Base (1 meter, 5 meter, 10 meter)
- **DTED** – Digital Terrain Elevation Data (Levels 0, 1, and 2)

Interoperability with other tools, including:

- **ESRI's Shapefiles** – Import and export of shapefiles compatible with OpenMap and FalconView products. *
- **IWPC XML** – Interoperable with Information Warfare Planning Capability application suite data. *

Builder's scenarios may be populated using fused information from multiple sources utilizing ComGlobal's Intelligence Situation Awareness Tool (**ISAT**).  Data links supported include:

- Officer-in Tactical-Command Information Exchange System (**OTCIXS**)
- Tactical Information Broadcast System (**TIBS**)
- Global Positioning System (**GPS**)
- **TDDS** (IBS Simplex/Network)
- **Link-16** (via Rosetta)

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* Scheduled for release in version 3.1 in Fall 2005