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2018

What's Up MAK

Off to a Fast Start

MAK customers feature great variety, we look to build on that in 2018.

A Deeper Dive: MAK goes to the west coast

We've added two new terrains: California and Emerald City.

Tech Tip: Strategies for Building VR-Forces Scenarios

Fred helps you find efficient ways to build scenarios.

NewsMAKers

We announce upcoming training, Steve reports from Colombia, and MAK is featured in MTSN magazine.



Off to a Fast Start

MAK customers are wide and varied. They're adopting the expanded product suite and continuing long relationships with MAK. **By Dan Schimmel, MAK CEO**

We've had a great start to 2018 as we've expanded our suite of software offerings and appealed to a wide range of users. We are very grateful to all of our customers for this strong vote of confidence. MAK recognizes all of you have challenges on your simulation and training projects, along with many options in what software you buy and with whom you choose to do business. In this complex landscape, our mission is to add value to your projects in a number of ways. When you choose to use MAK products, you gain the freedom to build your system in the most efficient way possible, whether that is through component development with our toolkits or other more ready-to-use solutions. We help you capitalize on the latest simulation software technology, back you up with excellent service, and in general make sure you "get ahead of the game."



In what has seemingly become a first-quarter tradition at MAK, the beginning of 2018 has featured recent or imminent upgrades to the entire MAK product suite. Customers are always asking us to expand the range of capabilities in our COTS software products, and at the same time maintain our long-held belief that software tools should work well together right out of the box. We build these products with integration and interoperability in mind to save time and reduce hassle for our customers.

As we've rolled out our latest releases, we've seen an uptick in deals in response. While looking at some specific deals of the quarter, a number of themes emerged:

Customers taking advantage of larger and deeper relationships with MAK

More companies are building a deeper partnership by selectively integrating MAK services into the development of their systems. We take pride in delivering strong technical support with our products. When customers buy our software, they should feel as if they have an "engineer down the hall" to help them derive the most value from our advanced technology. Increasingly, as our customers find themselves under severe budget and time pressure, VT MAK is able to help them offload some of this burden as a holistic solution partner, with additional application (or content) development services to help the project achieve success.

A great example of this phenomenon is when MAK was recently awarded a major contract to provide an air force client with simulation software. The deal centers on a large purchase of VR-Forces, MAK's market-leading simulation software, and MAK's Link product line, which connects simulation systems inside facilities and between sites using efficient and standard communications technology. VR-Forces will be used to model thousands of commercial and military aircraft inside a single simulated environment as part of the air force training. As part of the contract agreement, MAK will also deliver on-site training of MAK's COTS products and high-level architecture (HLA).

A range of innovative rotary and fixed wing use cases in air domain

- A leading helicopter manufacturer chose DI-Guy human character simulation for their training simulators, adding important context to their scenes. They have integrated the DI-Guy API into the trainer's Image Generator, and VR-Forces is used to control the actions of the characters in support of the training mission scenarios.
- On a different project, that same helicopter manufacturer added VR-Forces to demonstrate new capabilities to potential customers of helicopter systems.
- A flight simulation company picked DI-Guy human character simulation for their fixed-wing aircraft simulators. DI-Guy API is integrated into the trainer's IG and VR-Forces is used to control the actions of the characters on the ground in support of the training mission scenarios.

Customers replacing their legacy systems with MAK's COTS products.

- One of the largest global system integrators purchased RadarFX to replace the legacy sensor simulation in their embedded UAV trainers.
- A flight simulation company recently decided to switch to VR-Link as their simulation interoperability solution, allowing them to connect their simulators to DIS/HLA networks.

Long, diverse, and expanding MAK usage, built on trust and delivery

MAK has a rich history, which includes longtime relationships with almost every major global defense systems integrator and simulation company. We have been happy to see those customers choose to extend their adoption of MAK solutions into the future.

- We saw a 20+ year relationship get renewed and extended for a military corps-level simulation system using VR-Link to connect simulation components.
- That same customer, as well as another military group, also renewed their use of the MAK Data Logger to record and replay simulation exercises for some of the largest military projects in existence.
- A helicopter manufacturer who depends on MAK software decided to renew their product relationship with us, many years after successful delivery of the initial system.
- A major system integrator decided to extend their communications analysis simulation by adding VR-Forces to model platform mobility, while continuing to use VR-link to model high-fidelity communications.
- One of the largest system integrators is taking advantage of MAK's flexible licensing models to give their simulators the ability to be transported without being tied to a license server.

Moving forward, MAK will continue to be a leader as our industry changes and grows. We intend to bring you a continuing wave of innovations. Some will be evolutionary, the incremental and highly useful type of improvements our users constantly request, that fill out MAK's near term (6-12 months) product roadmap. Think more content, usability, ever-improving visual fidelity, improved performance, more AI in VR-Forces, more VR-Engage first person capabilities, faster terrain generation.

Some innovations will be more disruptive and revolutionary, taking longer (2-4 years) to develop but potentially moving the frontier of what simulations are able to do. Likely enablers in this category include cloud-based simulation, virtual machines, VR/AR/MR, much smarter AI algorithms embedded in the CGF, more LVC interoperability, simulations with dramatically

higher entity counts, IoT, and high fidelity procedurally generated terrain, all delivered with excellent performance.

It's interesting to look at our relationships and see their roots grow (in many cases) decades into the past. We're seeing our customers build on that stability and branch out to incorporate more MAK products in their solutions. Yet, as spring emerges in Cambridge, we're more excited than ever about what we have in store for you in the future.

MAK goes to the west coast: Two new terrains in VR-Forces 4.6

We are happy to introduce California and Emerald City (Seattle), two new terrains that come free with VR-Forces 4.6 and are available via our VR-The World online server.

Both are great for demos or as a quick start to building high-resolution, specialized areas.

These are great examples of how to create .earth configuration files, pulling together data from different types of sources, including OpenStreetMap (OSM) data and cut-in hand-modeled areas. In VR-Forces, you can view the .earth files and use them either as they are, or as a template for developing your own terrains.

California, California Air

The California terrain is a large stretch of highly-varied geography encompassing the entire state of California, with elevation resolution down to half a meter and imagery resolution down to one foot in certain areas.

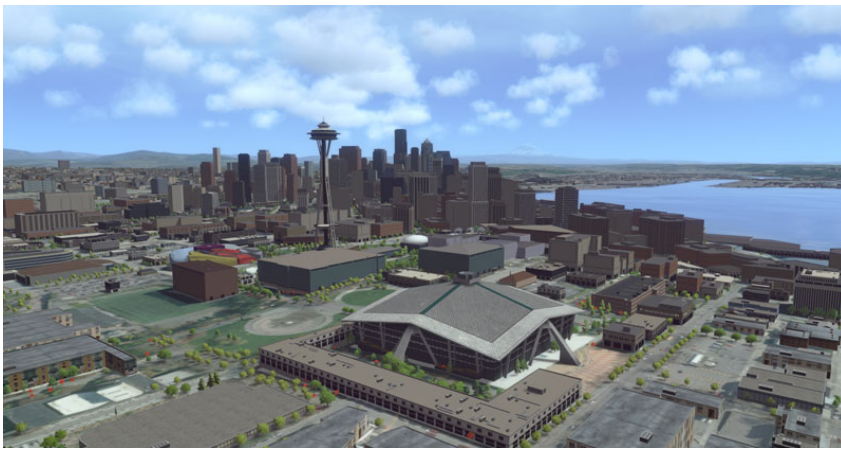
There are several places designed to take advantage of the variable topography of California to provide a diverse collection of training environments. These include the Twentynine Palms Marine Corps Air Ground Combat Center, the Twentynine Palms airport, Range 220 military operations in urban terrain (MOUT) facility (a middle-eastern style urban training range, complete with destructible buildings, interiors, and tunnels), and Avalon Harbor.



Customers can tune the performance based on their needs, including smooth performance when traveling quickly at a high range, rich environments for on-the-ground exercises, or bathymetry for accurate maritime simulations.

Emerald City

Emerald City (available by downloading the supplemental data pack) is a fantastic terrain for simulating dense urban ground scenarios. While the outskirts of the city are rendered directly from OSM data, a large section of Seattle's downtown geospecific landmark



buildings are hand-modeled by SE Core, whose modeling can be easily integrated using MAK's tools. These include the Space Needle and Key Arena.

For more information on our Terrains, check out our [Terrain Whitepaper](#). For more Information on VR-the World Server, click [here](#).

Tech Tip: Strategies for Building VR-Forces Scenarios

Many of the web sites that most of us read regularly are not composed of static pages. They pull content from a variety of sources to customize the pages for the reader. You might see the same news article show up on the sites for multiple different news outlets. This is called content reuse. The goal is to get maximum use out of each content component. **Similarly, VR-Forces supports many strategies for reusing scenario components.** Using the same terrains for many different scenarios is an obvious case, but for this tech tip we will focus on ways to reuse scenario content – simulation objects and tactical graphics.

Simulation Model Sets (SMS). An SMS defines all the simulation objects available to a scenario. You can create your own custom SMSs to meet your simulation needs and reuse them in as many scenarios as you want.

Simulation Object Groups. Simulation objects groups, which are created as part of an SMS, can include entities, units, tactical graphics, plans, and scripts. They allow you to replicate a related group of simulation objects in multiple scenarios. They are not tied to a particular terrain or location. You can put them anywhere that makes sense, just like individual simulation objects. Examples provided with VR-Forces include a Patriot Missile Battery and an aircraft carrier with an air wing.

Scenario import. VR-Forces users often divide up the task of creating scenarios among multiple people or groups. One might work on the land portion, another the air, and so on. The master scenario is created by importing the partial scenarios into a master scenario. This approach can be extended by creating generic or multipurpose scenarios for reuse. For example, you might create a generic urban scenario with pedestrian and vehicular traffic and then use it multiple times by adding additional content for specific training purposes.

Order of Battle. The SMSs provided with VR-Forces give scenario creators access to all of the simulation objects that we provide. However in the real world, commanders do not have unlimited resources. They are constrained by their Order of Battle (OOB). In the past, if trainers wanted to constrain the resources available to VR-Forces trainees, they might cut down the SMS to limit their choices or give them a paper OOB. In VR-Forces 4.6, we have introduced the ability to create OOBs. (The details of using OOBs will be covered in another tech tip, or you can refer to VR-Forces Users Guide.) You can export OOBs and import them into other scenarios allowing you to build them once and use them many times.

Object import from CSV. Some VR-Forces users have the ability and need to precisely specify point, linear, and areal objects outside of the VR-Forces GUI. In VR-Forces 4.6, we have added the ability to import objects whose location is specified in comma separated values (CSV) files. This feature supports import of tactical graphics and individual entities.

Import MSDL. You can export the simulation objects in a scenario to MSDL and import that MSDL into other scenarios.

Copy and paste. Did you know that you can copy simulation objects in one scenario and paste them into another scenario? Unlike a scenario import, which would bring objects into the same terrain at the same location, objects can be pasted anywhere, so you aren't restricted by your choice of terrain. (Of course, VR-Forces has to be running while you switch scenarios. It won't remember what you copied after you shut it down.)

System and scenario level scripts. If you have created new tasks and set data requests using the Lua scripting feature, you can save them with an SMS (system level) or you can export them and import them into specific scenarios. Either way, they are reusable in multiple scenarios.

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VR-Forces Training (On-site)

Date: JUNE 11-15, 2018

To sign up, please contact your salesperson. If you would like to experience an on-site course designed around your needs, including in-depth programming, please email us at info@mak.com.

Missed a class? Online courses are available to watch and download at your leisure [here](#).

Steve Peart and Ivan Diaz conducted a ***modeling and simulation seminar*** in Bogota, Colombia on Tuesday, March 13th. Attendees saw the latest applications and developments within MAK software, including the Synthetic Training Environment, STE product summary, critical infrastructure protection, visual sensors (EO/IR, NVG), and joint training applications. To read Steve's report from the event, click [here](#).

We've re-launched our presence on Facebook, where we bring frequent updates, show news, videos, and sneak peeks of MAK products. Visit us [here](#) and follow to always get the latest from MAK!

VR-Vantage was featured in a great article on image generators from the latest edition of MTSN magazine. Pick up the issue [here](#).

Check out Fred's new blog post, which shows how VR-Forces 4.6 lets you [add new state properties to simulation objects without writing code](#).

VT MAK has been named a finalist in MS&T's 2017 Industry Simulation and Training Awards, for excellent performance as a solutions provider within the global defense community! Get more information on the awards [here](#).

