Contact: Dianna Gutierrez

FCA US LLC Looks 20 Years Into the Future With SRT Tomahawk Vision Gran Turismo

Single-Seat Hybrid Powertrain Concept Vehicle to be Released Exclusively in Gran Turismo®6

- Engineered by the SRT (Street and Racing Technology) engineering team, the SRT Tomahawk Vision Gran Turismo is the latest vehicle to be released in *Gran Turismo 6* as part of Polyphony Digital Inc.'s *Vision Gran Turismo* collaboration with leading automotive manufacturers, design houses and other leading global brands
- Single-seat SRT Tomahawk based on a 20-year forward vision of existing and future potential technologies
- Aggressive, functional exterior design selected from sketch competition open to entire FCA US design community
- Three powerful versions – S, GTS-R and X – offering increasing levels of performance and technology
- Futuristic hybrid powertrain combines wide-angle V-10 with pneumatically driven front wheels
- Range-topping SRT Tomahawk Vision Gran Turismo X boasts 2,590 hp combined

June 2, 2015, Auburn Hills, Mich. - Making its debut today, FCA US LLC's latest concept car, the SRT Tomahawk Vision Gran Turismo, is a single-seat concept that pulls from existing and potential technologies to test the limits of performance. *Gran Turismo®6 (GT6™)* fans can stretch those limits on the virtual track this summer when then the V-10, 2,590 combined horsepower SRT Tomahawk Vision Gran Turismo X launches exclusively in *GT6* for the PlayStation®3 console.

The SRT Tomahawk Vision Gran Turismo is the latest addition to the *Vision Gran Turismo* project where automakers, design houses and leading brands around the globe showcase special concept vehicles exclusively in *Gran Turismo®,* one of the most popular video game franchises in history. Beginning summer 2015, players can access three powerful versions of the SRT Tomahawk Vision Gran Turismo by successfully completing online challenges of varying degrees of difficulty in *GT6.*
After completing the challenges, players will find the entry level SRT Tomahawk Vision Gran Turismo S, the racing version GTS-R and the experimental technology ultimate version X concept vehicles in the game's SRT garage.

"I'm truly happy that FCA and its performance division, SRT, have captured the spirit of the Vision Gran Turismo with the SRT Tomahawk Vision Gran Turismo," said Kazunori Yamauchi, creator of *Gran Turismo* and president of Polyphony Digital, Inc. "FCA designers took part in a design competition and the concept that was chosen is extreme in every way with its striking form, aerodynamic proportions, internal mechanisms and advanced driver's suit. Due to the radical design of the vehicle, our physics team had to develop new physics for *Gran Turismo* in order to represent the car properly in the game. We thank everyone at FCA who enjoyed the *Vision Gran Turismo* project and I am looking forward to the day when we can share the vision of SRT with *Gran Turismo* players."

Internal Design Competition Brings Multitude of Ideas
The extreme exterior look of the SRT Tomahawk Vision Gran Turismo was born from an internal design competition that sought a futuristic (2035) interpretation of a high-performance Dodge. But this single-seat car is more than just digital design fantasy.

"It doesn't take much to bring out the competitive spirit of the FCA US design team," said Ralph Gilles, Head of Design, Fiat Chrysler Automobiles N.V. "We have plenty of *Gran Turismo* fans in the room and every one of them has the same goal – win the race. Everything we've done with the SRT Tomahawk Vision Gran Turismo aims for that goal."

The popularity of video games among the members of the FCA US design studios meant that giving the *GT6*

assignment to one person or one studio was not an option. Everyone, from interns to seasoned designers, was invited to submit a sketch. As a result, designers worked on their sketches in their spare time, weekends and after hours producing a flood of proposals.

At the conclusion of the judging process, Paul Hoste was selected as the winner. Hoste, a young designer and new to FCA, grew up playing Gran Turismo. He was inspired by concept art and gravitated toward a design that had amped up, voluptuous curves that paid homage to iconic Dodge performance vehicles.

The overall shape of the SRT Tomahawk Vision Gran Turismo imparts a sense of movement and flow. The front view conveys an aggressive, almost menacing character, while the rear view takes on a bolder and powerful aesthetic with angular graphics and asymmetric look to the fenders.

All of the transparent elements, including the cockpit and engine cover, are made from ultra-light graphene skins. The driver views the SRT Tomahawk Vision Gran Turismo's instruments and communication system on a clear digital overlay on the graphene windshield.

A large air intake for engine cooling is mounted on the hood. Active panels mounted above the front and rear fenders are constantly moving, via pneumatic assist, to create the optimal amount of aerodynamic downforce for braking assist and traction under acceleration.

An overhead view of the SRT Tomahawk Vision Gran Turismo is marked by a "pinched-waist" silhouette. An exposed aluminum spine channels air to help cool the V-10 engine.

Curved, voluptuous surfacing was used to create a timeless design that is accented by functional NACA style air intakes on the front and large air intakes for engine and brake cooling on the side.

The rear of the SRT Tomahawk Vision Gran Turismo has been thoughtfully designed for high impact – as this is the primary view for the gamer (and his or her competitors) during play. A bold, carbon fiber graphic detail is prominent. Thin LED lights and five large exhaust ports are integrated in the rear diffuser to create an intimidating and planted look.

Hoste worked closely with SRT engineering to optimize the hard points and performance numbers of his design for function and aerodynamics.

A Virtual Car Engineered for the Real World

With a full set of engineering and performance specifications developed by the SRT engineering team at FCA US, the capabilities of the SRT Tomahawk Vision Gran Turismo are rooted in an effort to push performance just beyond the limits of known science.

The entire vehicle design, from the driver position to the nearly flat layout of the V-10 engine, is intended to achieve the lowest possible center of gravity. The SRT Tomahawk Vision Gran Turismo was engineered and developed to the same uncompromising standards as any SRT vehicle on the road today. SRT engineers also worked in their spare time and on weekends to create three extremely fast cars that test the limits of human physiology.

"We had fun stretching our minds to create the SRT Tomahawk Vision Gran Turismo for *GT6*. The game places a high emphasis on capturing reality in a virtual environment; our goal was to respect that philosophy by focusing on plausible future technologies that could achieve our vision of extreme performance," said Mike Shinedling, Manager – Advanced Concepts, SRT Engineering, FCA US LLC. "Everyone can appreciate an exquisite design and something that is beautifully engineered; when those two things are brought together in a fusion of cooperation, there is nothing more exciting."

Key engineering features of the SRT Tomahawk Vision Gran Turismo include:

- Ultra-lightweight materials used in the chassis and body work result in a car that weighs just 1,658 pounds in its ultimate performance configuration – just slightly heavier than a current day Formula One race car.

- Rear wheels are powered by a wide-angle (144 degrees) V-10 engine that delivers up to 2,168 horsepower.
- Front wheels are pneumatically driven independently. Combined with the V-10 powertrain, the SRT Tomahawk Vision Gran Turismo boasts up to 2,590 hp. Maximum performance version the SRT Tomahawk Vision Gran Turismo rolls with 1.56 hp per pound.
- In addition to the front wheel power unit, pressurized air drives fast-actuating aerodynamic body panels for enhanced braking/traction performance, and activates driver's G-suit during extreme maneuvers. Pressurized air is stored in tanks integrated into SRT Tomahawk Vision Gran Turismo's chassis to negate any weight penalty.

Three Performance Levels
The SRT Tomahawk Vision Gran Turismo comes in three variations:

- **Entry-level S:** Game players must first master the base version of the SRT Tomahawk Vision Gran Turismo. The 7.0-liter wide-angle V-10 is tuned to deliver 792 hp (compared with 645 hp for the 8.4-liter V-10 in the 2015 Dodge Viper). The pneumatically driven front wheels add 215 hp, for total system output of 1,007 hp. With a curb weight of 2,026 pounds, this version of the SRT Tomahawk Vision Gran Turismo is the heaviest, yet it has a top speed in excess of 250 mph.
- **Racing version GTS-R:** Race tuning pushes output of the V-10 to 1,137 hp, while the air-driven front wheels add 313 hp for total system output of 1,450 hp. Aggressive weight-cutting techniques whittle the curb weight of the Tomahawk Vision Gran Turismo GTS-R to 1,459 pounds (the lightest of any version) and the top speed in excess of 300 mph.
- **Experimental technology ultimate version X:** This is the ultimate Tomahawk Vision Gran Turismo. With a redline set at 14,500 rpm, the V-10 engine pumps out 2,168 hp (nearly three times the output from the base Tomahawk Vision Gran Turismo S) The front wheel drivetrain contributes an additional 422 hp at peak, for total output of 2,590 hp. That gives the Tomahawk Vision Gran Turismo X a top speed of 404 mph. Due to the extreme performance of the X version, the driver is required to wear a G-suit for protection.

The single-seat, mid-engine, all-wheel-drive SRT Tomahawk Vision Gran Turismo uses a purpose-built composite chassis. The chassis uses emerging and advanced materials, including hollow carbon nanofibers and graphene micro-lattice structures. Filament-wound pneumatic cylinders are integral structural elements laminated into the chassis.

To assist in cooling the carbon brake disks, the pneumatic front power unit builds up a "chill-sink" with expanding air during power delivery. This chill-sink is used to deliver required brake cooling with a minimal amount of air flow, thus greatly reducing aerodynamic drag.

In order to withstand the massive cornering and down force loads, next-generation compounds and construction were used to create the tires. The on-board pneumatic system continuously monitors and adjusts tire pressures according to the vehicle demands.

Charge, Recover, Release
While the V-10 engine drives the rear wheels, the SRT Tomahawk Vision Gran Turismo's front wheels are linked to a variable-fin quad-stage pneumatic power unit that can quickly store and release energy. When the Tomahawk Vision Gran Turismo's brakes are activated, or the V-10 engine is not at max power, the pneumatic power unit compresses air into the long, composite tanks that are structural members of the chassis. The compressed air is released to drive the front wheels, power the Tomahawk Vision Gran Turismo active aero panels and pressurize the driver's G-suit in the Tomahawk Vision Gran Turismo X.

Pneumatic energy is generated in three ways:

- Pre-race full charge
- Braking re-generation charge via independent power units at each front wheel
- Engine charge during braking and as part of the stability control system. During hard corner-exit and launch acceleration, when wheel spin is detected, excess available power is pulled from the engine via a third power unit

Pneumatic energy is released in five primary ways:

- Front-wheel drive
- Fast actuation of aerodynamic panels
- Charging the variable spring rate suspension system
- Wake modification for low drag, high speed runs on long straights (Nordschleife Dottinger-Hohe, Mulsanne Straight, Bonneville Salt Flats/LSR)
- Pressurization of driver G-suit

Aggressive Aerodynamics

SRT engineers called for an aggressive aerodynamic strategy to manage airflow at extreme speeds. The Tomahawk Vision Gran Turismo's aerodynamic system reacts to inputs from a forward scanning laser system that detects surface changes. The computer controls anticipate changes in vehicle ride height, pitch and yaw and adjust the splitter accordingly.

The SRT Tomahawk Vision Gran Turismo not only generates a tremendous amount of downforce, it also generates yaw force, normally seen in aircraft. There are nine active aerodynamic panels and two front splitters that actively steer the car through the air and help the vehicle corner at extreme speeds. These aerodynamic features are constantly adjusting to track conditions and driver inputs in order to provide the highest level of down force when needed. However, in a top speed run, the panels can be tucked to create a slippery, low-drag shape.

The V-10's exhaust system is routed to the rear diffuser in a series of paired runners. Flow from the exhaust works in conjunction with the active aerodynamic system to provide an acceleration of underbody flow at the rear of the car and create a blown diffuser effect that increases down force without a negative effect on drag.

Pneumatics also drive the Tomahawk Vision Gran Turismo's suspension. The car rides on a set of variable-rate pneumatic springs with adjustable jounce and rebound damping. A revolutionary active camber system adjusts the wheel knuckles to "lean" the vehicle into turns, with each wheel angling outboard or inboard to maintain the optimum tire contact patch and highest possible mechanical grip.

About the Gran Turismo® Franchise

Gran Turismo® celebrated its 15th anniversary in 2013, having first appeared internationally in 1998. The multi-award-winning franchise has been the most successful ever for PlayStation®, and in 2013 it also surpassed worldwide sales of 70 million units. Various iterations of Gran Turismo have been created for PlayStation® , PlayStation®2, PlayStation®3 and PSP (PlayStation®Portable) systems, and have always been regarded as the best and most authentic driving simulators ever created due to true-to-life graphics, authentic physics technology and design. Since the inception of Gran Turismo, famed creator Kazunori Yamauchi and Polyphony Digital Inc. in Japan have revolutionized the racing category as we know it today. His offerings provide the most realistic driving simulation in the industry and a unique medium for automotive manufacturers to showcase their products. Gran Turismo®6, the latest iteration of the game, was released on December 6, 2013.

About FCA US LLC

FCA US LLC is a North American automaker based in Auburn Hills, Michigan. It designs, manufactures, and sells or distributes vehicles under the Chrysler, Dodge, Jeep®, Ram, FIAT and Alfa Romeo brands, as well as the SRT performance designation. The Company also distributes Mopar and Alfa Romeo parts and accessories. FCA US is building upon the historic foundations of Chrysler Corp., established in 1925 by industry visionary Walter P. Chrysler and Fabbrica Italiana Automobili Torino (F.I.A.T.), founded in Italy in 1899 by pioneering entrepreneurs, including Giovanni Agnelli. FCA US is a member of the Fiat Chrysler Automobiles N.V. (FCA) family of companies. (NYSE: FCAU/ MTA: FCA).

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