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Titimag.com

EDITOR

Dickson Max Prince

CONTRIBUTORS

Anita .W. Dickson

Efenudu Ejiro Michael

Bekesu Anthony

Dickson Max Prince

Ernest .O.

PUBLISHERS

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For more info
info@titimag.com

+2348134428331 +2348089216836



World War

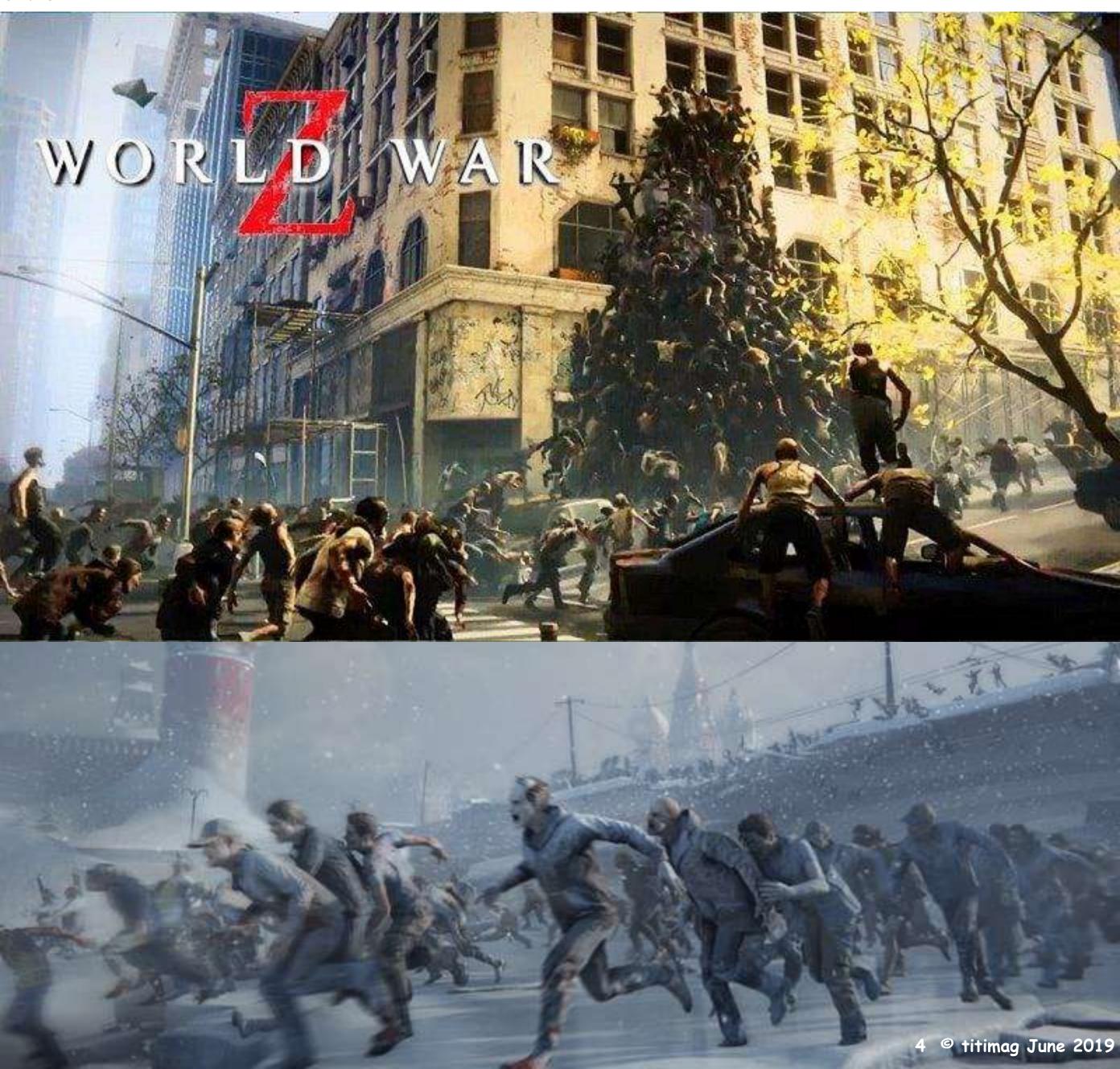
Z

Gameplay

is a third-person shooter video game developed by Saber Interactive and published by Focus Home Interactive. It was released for Microsoft Windows, PlayStation 4, and Xbox One on April 16, 2019. Loosely based on the 2006 book of the same name, and set in the same universe as the 2013 film adaptation, the game follows groups of survivors of a zombie apocalypse in the cities of Moscow, New York, Jerusalem, and Tokyo.

The game is a cooperative third-person shooter in which four players fight against massive hordes of zombies in four locations: Moscow, New York, Jerusalem, and Tokyo. Players can choose from six classes, including Gunslinger, Hellraiser, who specializes in using explosives, Fixer, Medic, Slasher, who uses a melee weapon, and Exterminator, who specializes in crowd control. New perks and weapons can be unlocked for each of the classes as players progress in the game. The game can support up to 1000 enemies appearing on-screen simultaneously, and they can climb onto each other to reach players on a higher level. Players can collect different items in the battlefield, but their locations are procedurally generated. In addition to fighting zombies, players also need to complete different objectives, such as escorting survivors, in each location.

The game features five competitive multiplayer modes. The Player vs Player vs Zombie mode pits two teams of players against each other while the zombie hordes attack both teams. Other modes include Swarm Deathmatch, Swarm Domination, and King of the Hill.





Development

Saber Interactive began the game's development after one of their teams completed the production of a Halo game. Approximately 100 people worked on the game. The studio decided to use the World War Z license for the game as they felt that there were too many risks involved in marketing a brand new intellectual property. Matt Karch, CEO of Saber Interactive, described the game as the combination of both the 2013 film and the book. Gerry Lane, the character played by Brad Pitt in the 2013 movie, is not in the game as the team opted to include multiple survivors who have their own stories. The team took inspiration from The Chronicles of Riddick: Escape from Butcher Bay when they were exploring how they could incorporate elements from the film and the book into the game. Left 4 Dead also inspired the developer when they were crafting the game's gameplay. A proprietary game engine named the Swarm Engine was used to power the game and render the huge zombie hordes.

The game was announced at The Game Awards 2017. Focus Home Interactive published the game on April 19, 2019 for Microsoft Windows, PlayStation 4 and Xbox One. It was also an Epic Games Storeexclusive.[9] Saber planned to support the game by introducing more episodes, characters, settings, and competitive game modes, after the game's launch.



God Eater 3 is an action role-playing game developed by Marvelous First Studio (Marvelous' internal deve<mark>lopment studio) and pub-</mark>

lished by Bandai Namco Entertainment. As the third main entry in the God Eater series, the game was released on February 8, 2019 for Microsoft Windows and PlayStation 4. A Nintendo Switch version will be released on July 11, 2019 in Japan and on the following day in America and Europe.

Gameplay

Like its predecessor, the game is an action role-playing game with hack and slash gameplay. Players are equipped with God Arc weapons which can be transformed into guns. In the game, players are tasked to hunt and kill massive monsters known as Aragami. The player character is a God Eater who can absorb energy from monsters to unleash "burst moves", special attacks that deal a lot of damage to enemies. Companion characters, which are controlled by artificial intelligence, assist in combat. Players can activate the Engage System to share combat perks with them during combat. The game can be played cooperatively with four other players, while assault missions accommodate up to 8 players.

Development

Marvelous replaced Shift as the game's developer since Bandai Namco wanted to create a new game that is very different from its predecessors. The game's introduction sequence was created by Japanese animation studio Ufotable. Unlike previous entries in the series, the game was not designed for handheld platforms. Officially announced in October 2017, the game has been released worldwide on February 8, 2019 for PlayStation 4 (with the exception of Japan) and Microsoft Windows, with an upcoming release for Nintendo Switch. The Nintendo Switch version will contain Tales of Vesperia-themed exclusive costumes.





Metro Exodus is a first-person shooter video game developed by 4A Games and published by Deep Silver in 2019. It is the third installment

in the Metro video game seriesbased on Dmitry Glukhovsky's novels, following the events of Metro 2033 and Metro: Last Light. The game received generally positive reviews from critics.

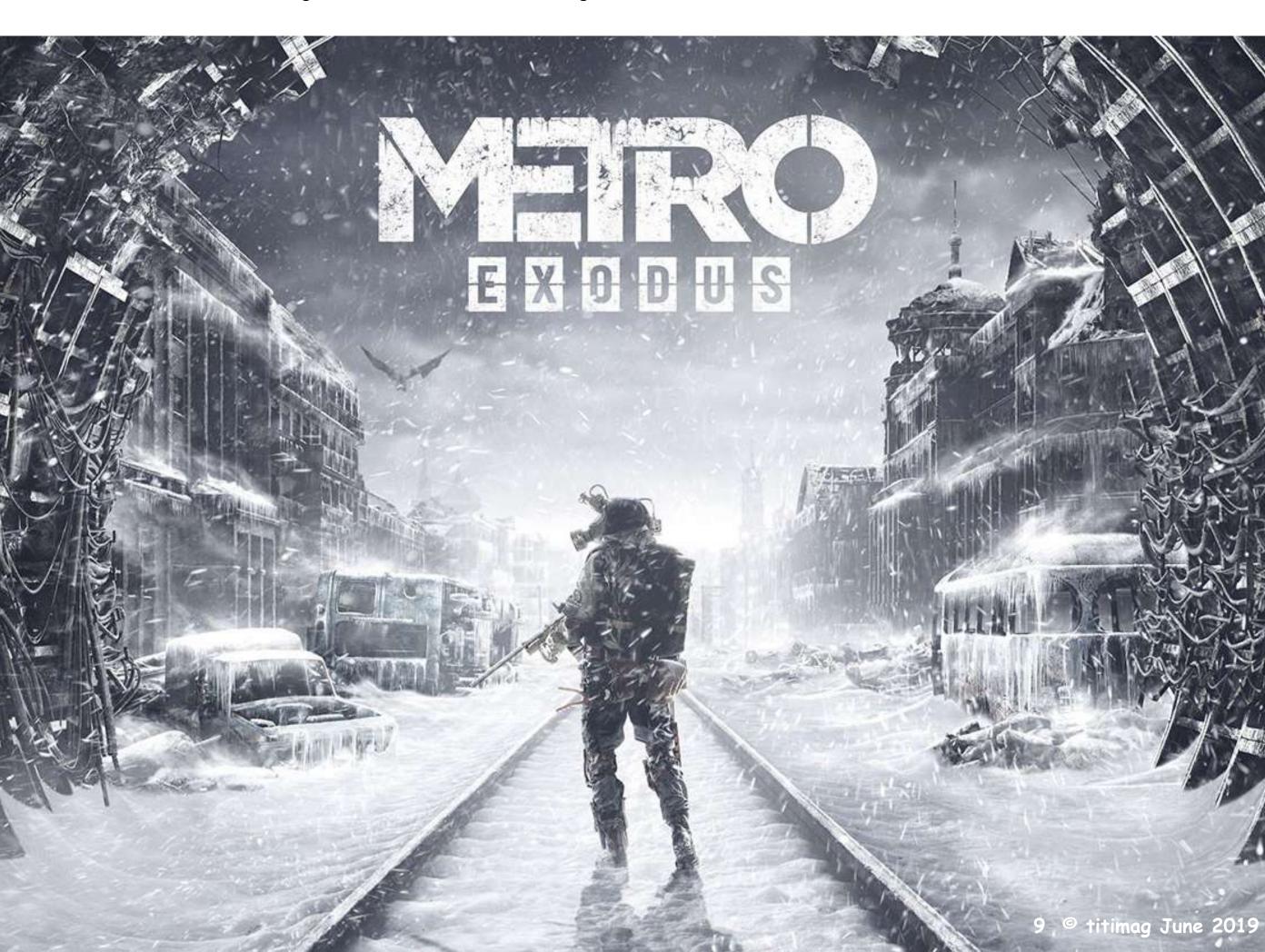
Gameplay

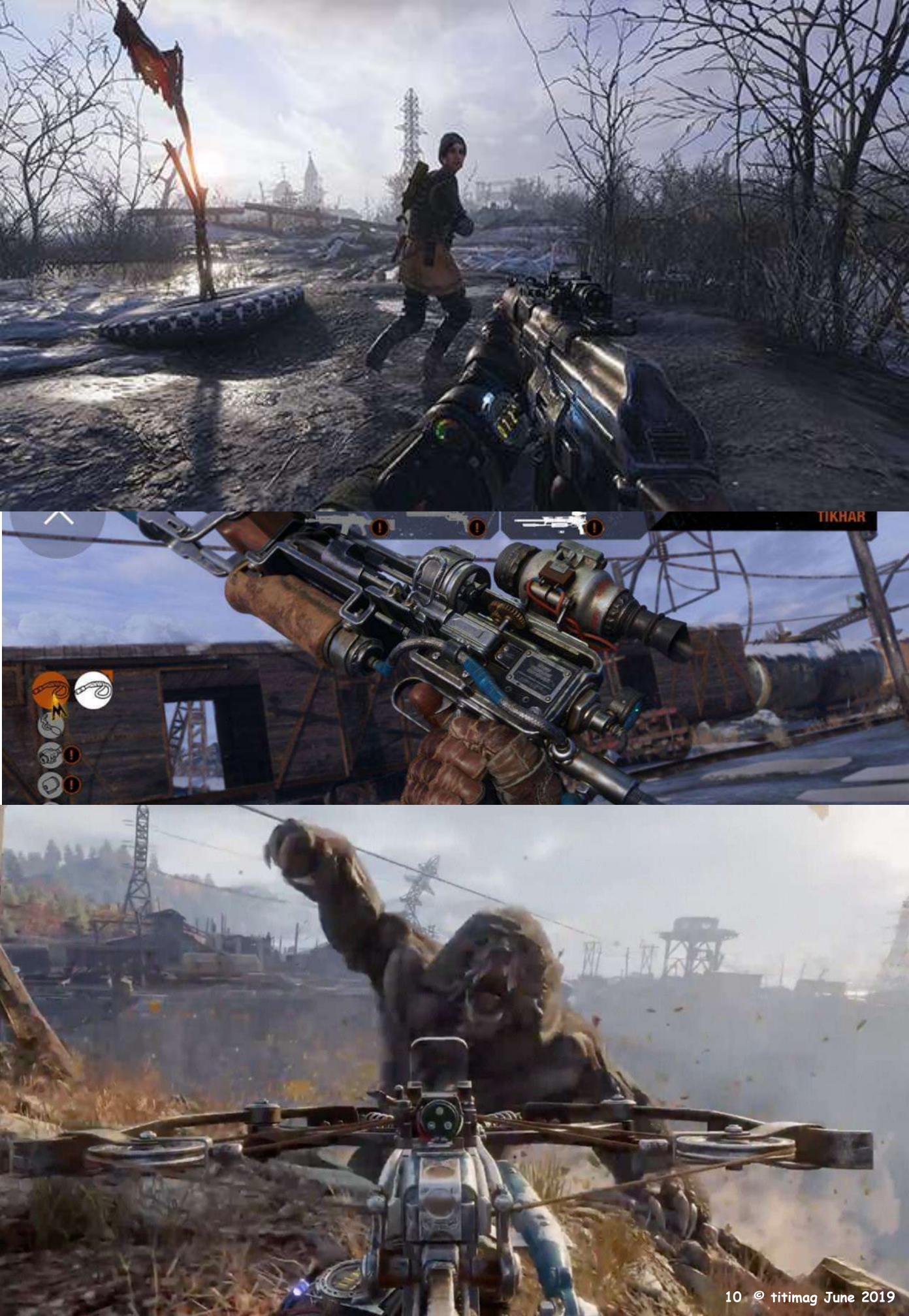
Metro Exodus is a first-person shooter game with survival horror and stealth elements. Set in the post-apocalyptic wasteland of the former Russian Federation, the player must cope with the new hazards and engage in combat against mutated creatures as well as hostile humans. The player wields an arsenal of hand-made weaponry which can be customized through scavenging materials and a crafting system. The game features a mixture of linear levels and sandbox environments. It also includes a dynamic weather system, a day-night cycle, and environments that change along with the seasons as the story progresses. It is set over the course of one whole in-game year.

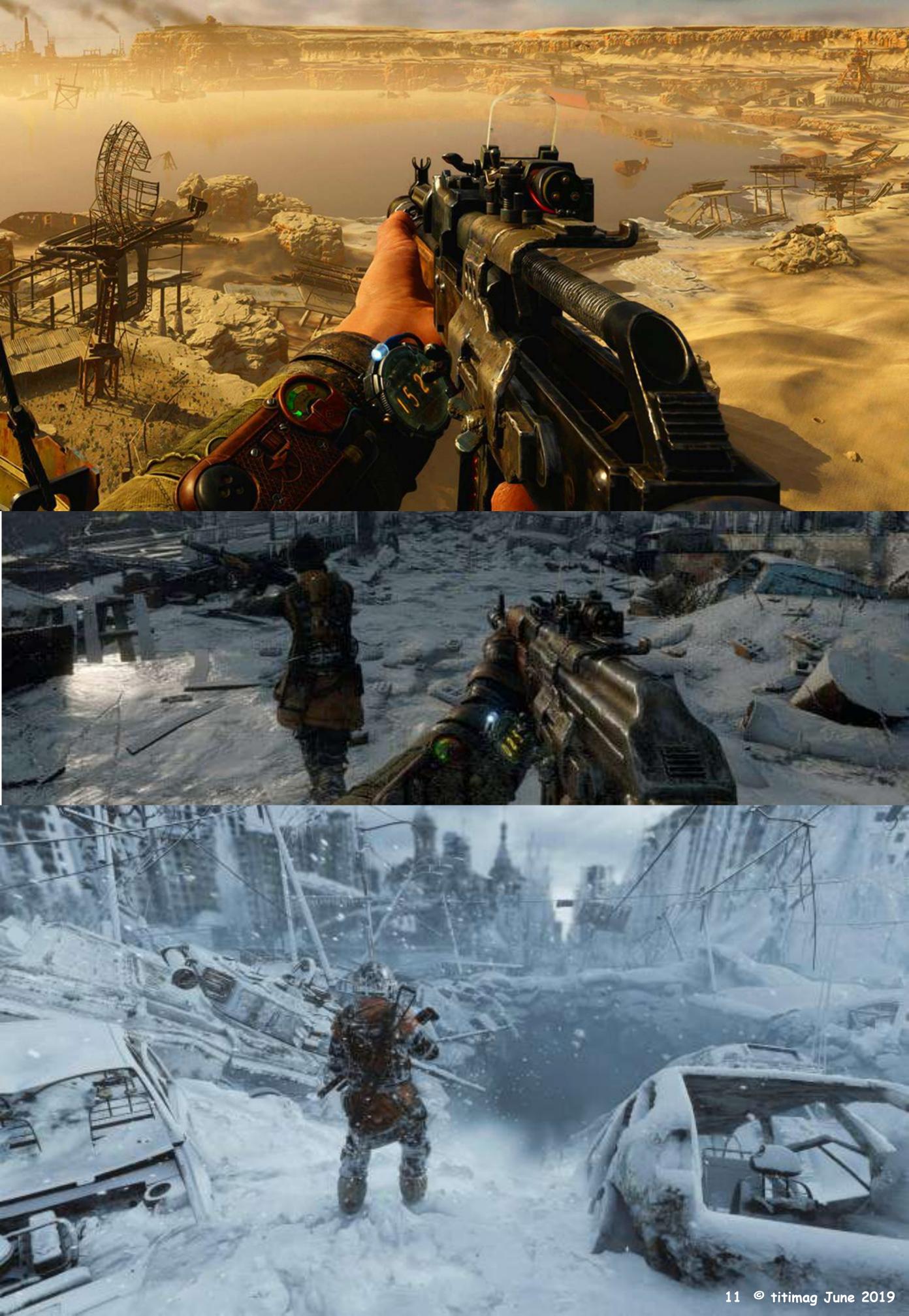
Plot

After the attack on D6, Artyom becomes disillusioned with the constant infighting and corruption within the Metro and leaves the Spartan Order. He soon becomes obsessed with proving that other human survivors exist outside of Moscow and makes numerous dangerous expeditions to the surface, much to Anna's concern and Miller's frustration. However, on one such expedition with Anna, they witness a working train running on the surface. Before they can follow it, they are captured by Hansa soldiers. The Hansa soldiers execute the other prisoners and Artyom is shot and left for dead. Surviving the gunshot, Artyom follows the soldiers to their base to rescue Anna, and in the process inadvertently destroys a signal jammer that was blocking all communications going in and out of Moscow. Radio transmissions from all over the world begin to be picked up, and Artyom and Anna realize humanity has not gone extinct. They escape by stealing one of Hansa's trains with the aid of a defected Hansa train engineer called Yermak.

As the train leaves, the Spartan Order moves in to retake it and are shocked and confused at Artyom and Anna's presence. Knowing that Hansa will have all of them put to death for knowing the truth, Miller concludes that the Spartans' best chance of survival is to flee Moscow. Once outside the city, he reveals to the others that while many of Russia's cities were bombed, the war did not end and NATOproceeded to occupy what was left of the nation. In order to prevent more bombs from being dropped on Moscow, the Russian leadership decided to secretly jam all communications to make the outside world believe nobody had survived. They then receive a radio broadcast from Moscow Defense Command calling for survivors to rally at the "Ark" located at Mount Yamantauand Miller decides to head there, believing that the Ark is where the Russian government has rebuilt itself.







After crossing the cult-controlled Volga River, the Spartans reach the Yamantau base and discover that the remnants of the base have devolved into cannibals luring survivors in with the false promise of safety. Artyom and the Spartans manage to fight their way out and escape, but Miller's faith in Russia is shattered when he discovers that the government never took refuge in Yamantau, or even survived the war, and thus the Spartans are left wondering what to do next. Using a map they recovered from Yamantau, they decide to travel to a satellite communication center near the Caspian Sea in the hopes of gaining access to a satellite to find habitable land to settle. At the dried up remains of the Caspian Sea, the Spartans steal water and fuel from the local bandits while obtaining an updated satellite map.

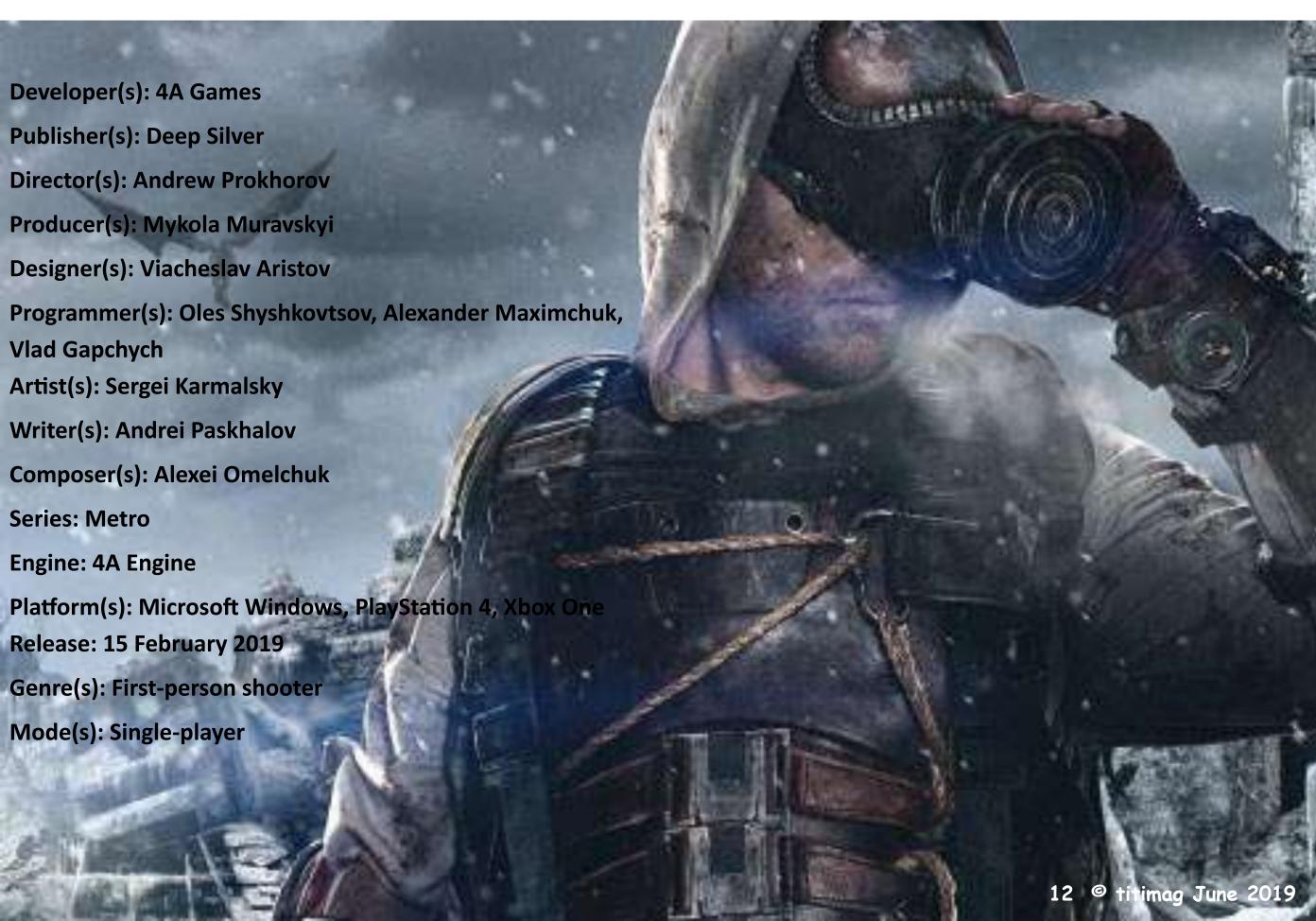
As the Spartans continue on their journey, Anna begins to cough up blood, fearing the cause was accidentally breathing poison gas during the journey. They decide to scout a nearby taiga forest valley to see if it is suitable to settle. While scouting the forest, Artyom is caught between two rival survivor factions, and he discovers that the dam protecting the valley from radiation is on the verge of failing, making the area uninhabitable. Artyom returns to the train to learn Anna's condition has worsened. The only chance to save Anna is to find the antidote in Novosibirsk, but the entire city is heavily irradiated.

Miller and Artyom decide to head into the city alone to search for the antidote despite the risk. They enter the Novosibirsk Metro and find a young boy named Kiril, one of the last of the Novosibirsk survivors. Kiril explains that his father left on a mission to obtain a map marking the location of a clean, habitable area. Miller decides to go find the map while Artyom heads out to find the antidote. He manages to recover the antidote, but is gravely wounded by a mutant and absorbs a heavy dose of radiation. Artyom, Miller, and Kiril return to the train with the map and the antidote, but Miller dies of radiation poisoning on the way back after using a dose of anti-radiation serum meant for himself to save Artyom. The rest of the Spartans donate their own blood to give Artyom a critical blood transfusion. Anna is cured with the antidote and with the map, the Spartans settle on the shores of Lake Baikal, which is completely free from radiation.

Artyom's ultimate fate depends on the choices the player made during the journey. In the bad ending, Artyom dies from the radiation poisoning, and the Spartans and a grieving Anna hold a funeral for him and Miller. In the good ending, Artyom survives. Miller is buried and Artyom is selected to take his place as leader of the Spartan Order. Now that they have a home, Artyom decides that it is time to search for other survivors.

Development and release

Metro Exodus is developed by 4A Games.[3]Development of the game began in 2014 at 4A Games' studios in Malta and Kiev.[2] The game uses the 4A Engine.[4] Metro Exoduswas announced on 11 June 2017 at Microsoft's press conference during E3 2017.[3] The game was released for Microsoft Windows, PlayStation 4, and Xbox One on 15 February 2019.[5] The first expansion pack, The Two Colonels, is set to be released in mid-2019. The second expansion, titled Sam's Story, is set to be released in early 2020.





Dirt Rally 2.0 is a racing video game developed and published by Codemasters for Microsoft Windows, PlayStation 4 and Xbox One.

It was released on February 26, 2019. The game is the thirteenth title in the Colin McRae Rally series and the seventh title to carry the Dirt name. It is a successor to the 2015 video game Dirt Rally and emphasizes realistic driving physics.

Gameplay

Dirt Rally 2.0 is focused on rallying and rallycross. Players compete in timed stage events on tarmac and off-road terrain in varying weather conditions. The game features stages in Argentina, Australia, New Zealand, Poland, Spain and the United States. Codemasters also announced plans to expand the game through the release of downloadable content. Dirt Rally 2.0 lets players choose between a total of fifty cars, including World Rallycross Supercars and eight circuits from the FIA World Rallycross Championship. Every car can have its setup adjusted before a race.

These are definitely necessary, as the game now also features a new weather modelling system where changes in the weather affect the relative level of grip and require players to take a more nuanced approach to driving. The weather also affects visibility in stages. The surface of the stages is also subject to degradation; as more cars pass over a stage, more than 100 layers ensure that the road surface will start to shift and break up, affecting grip levels. The gameplay therefore demands maximum concentration, especially as some tracks take more than 10 minutes to complete. There is no rewind function and damages not only have a visual but also mechanical effect.

The "My Team" mode introduced in Dirt 4 is expanded upon, requiring players to hire specialist engineers to maintain the car. Damage sustained during a rally carries over from event to event. Players are also able to make a wider range of strategic choices, such as tyre compounds; softer tyres offer more grip but wear out faster, while harder tyres are more durable but produce slower stage times. Codemasters is planning to introduce a more comprehensive tutorial for setting up the car to make the process more accessible for newcomers, amateurs and players who have been deterred from exploring setup options in the past.

DLC follows a fortnightly schedule, and will include the return of rally locations from the first game, as well as cars such as the Škoda Fabia and BMW M1.

Development

Dirt Rally 2.0 is the first game in the Colin McRae Rally series to be developed by Codemasters after game director Paul Coleman's departure from the company in early 2018. Rally drivers Ryan Champion and Jon Armstrong served as consultants throughout the game's development with occasional help from Oliver Solberg, while veteran co-driver Phil Mills lent his voice as the game's English-speaking co-driver.





Star Wars Jedi: Fallen Order is an upcoming single-player action-adventure video

game developed by Respawn Entertainment and published by Electronic Arts, set in the Star Wars universe shortly after Episode III – Revenge of the Sith. It was announced during E3 2018 and a more detailed reveal took place at the Star Wars Celebration in April 2019. The game will be released for Microsoft Windows, PlayStation 4, and Xbox One on November 15, 2019.

Premise

Taking place after Order 66, which started the galaxy-wide purge of the Jedi Order, players take control of Padawan Cal Kestis (portrayed by Cameron Monaghan), one of the last surviving Jedi.

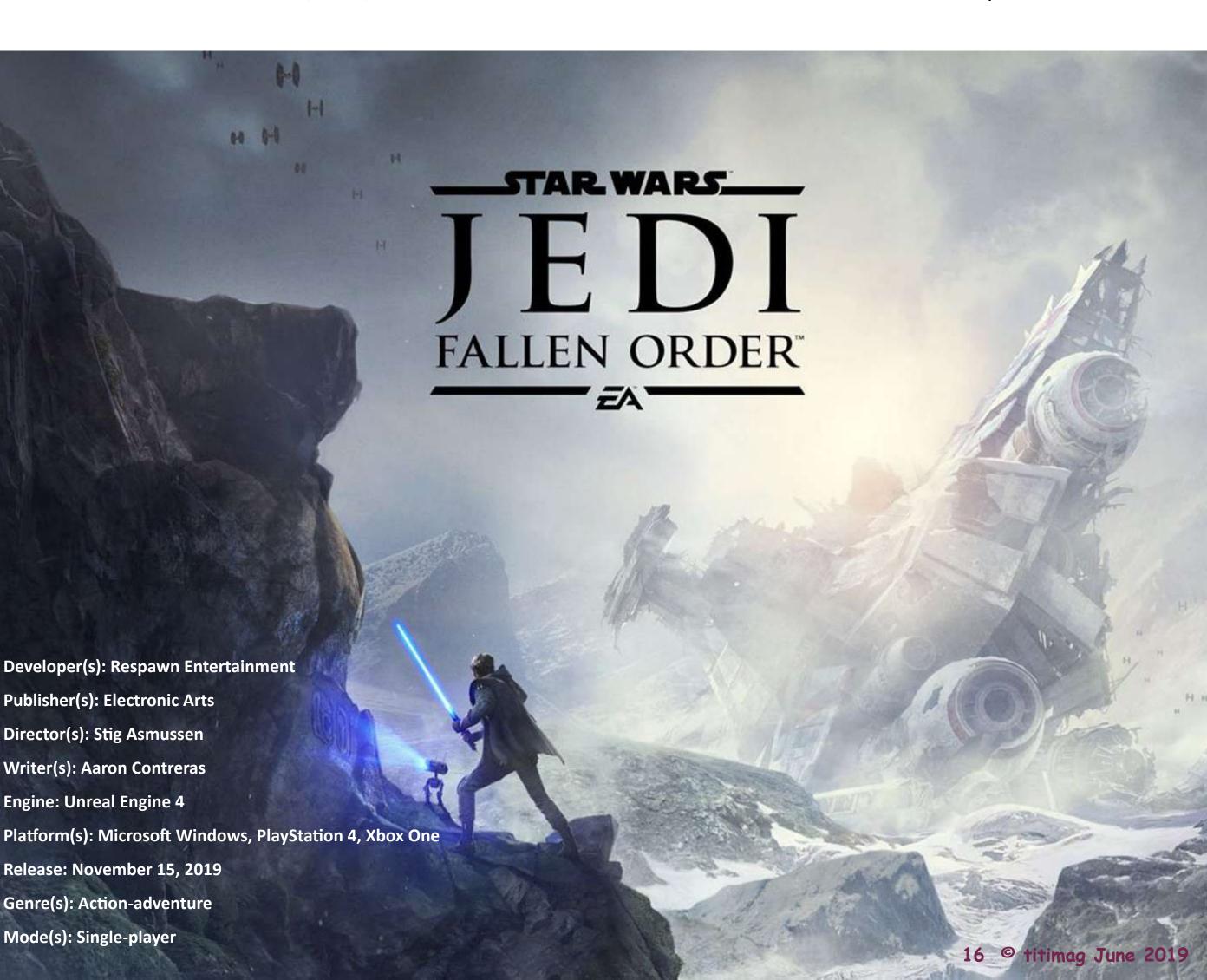
Development

Stig Asmussen joined Respawn Entertainment in 2014 as the studio's game director, leading the studio's second development team. The project was later revealed to be a third-person action-adventure game set in the Star Warsuniverse in May 2018. Aaron Contreras, who wrote the story of Mafia III, led the game's narrative team, which included Chris Avelloneand four other writers. The studio also collaborated with Lucasfilm to create new characters and locations.

The game was created with Unreal Engine 4.

Marketing and release

Publisher Electronic Arts announced the game at E3 2018. It is set to be released for Microsoft Windows, PlayStation 4, and Xbox One on November 15, 2019, a month before the theatrical release of Star Wars: The Rise of Skywalker.











SUITCH LANES

Avoid all obstacles...







Al Quad Lens, Shoot entertainment

Shooting becomes more natural and stunning with the help of an upgraded Al Quad Lens.

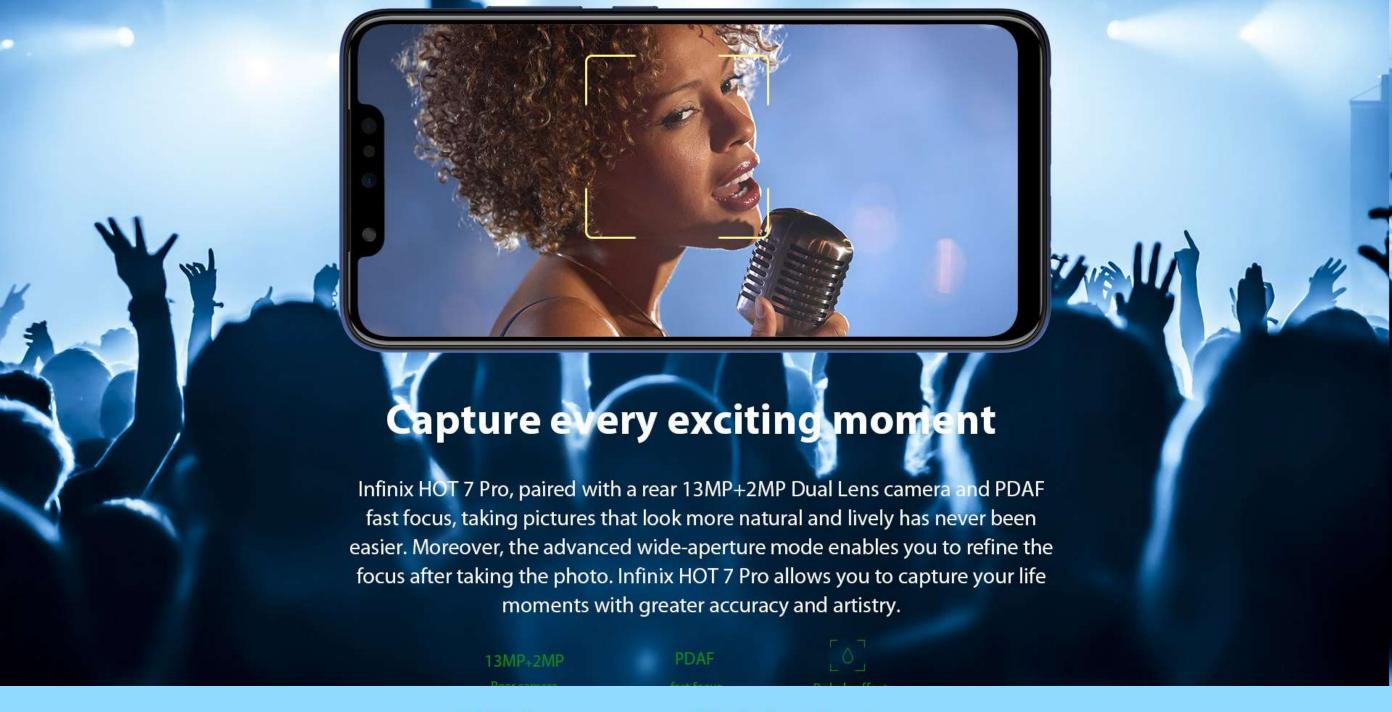


Show your best with Dual Front Camera

The Infinix HOT 7 Pro's front camera features 13MP + 2MP Dual Lens system, delivering crystal images with bokeh effects. With AI technology that enables the camera to detect your gender, age and your facial expressions and packages a beauty solution that gives you the perfect selfie that you desire.

13MP + 2MP Front camera





Widen your field of view

An expansive field of view that will take your breath away, taking you into the actual experience of the virtual world. Put your worries aside and let yourself be immersed completely in the entertainment encounters on offer.



Reliable proper power

. Uninterrupted experience of your kind of entertainment is guaranteed with the long lasting strong battery power. Worry no more about charging points or the need to have a powerbank with you at all times.



LOCOMAN 22 © titimag June 2019

Smart keys for double security

You will experience the most convenience unlocking the phone with your Face as your password. The smart Fingerprint key eliminates complicated passwords and provides secure activation of dormant apps, enabling privacy control in various other applications.





More powerful, More effective



XOS 5.0 New release

XOS 5.0 based on android P which is the latest of the android family, gives you optimized operations that is convenient and efficient, making the most of every inch of the apps within the smartphone. An updated XOS 5.0 is the latest in the XOS family, with optimized apps functionalities.





Search what you see with Google Lens

Get stuff done faster, and interact with the world around you. Copy and paste text, add events to your calendar, find products online and see similar styles, identify popular plants and animals, learn about landmarks, and more.

Available in the Google Assistant and camera app.

Google Lens





23 © titimag June 201



Powerful Faster Signal Reception

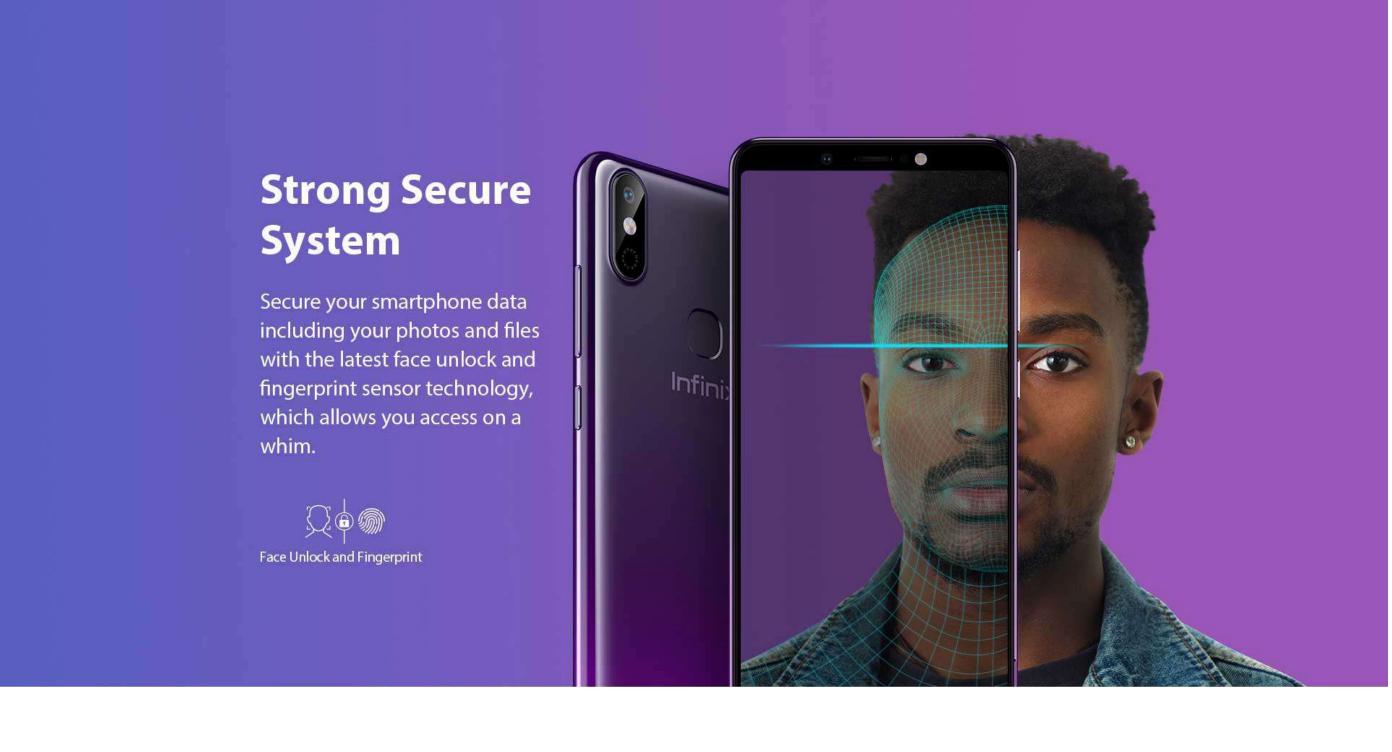
Supports LTE networks with a strong signal reception that supports both voice over internet calls as well as direct line calls in most places with 4G network.





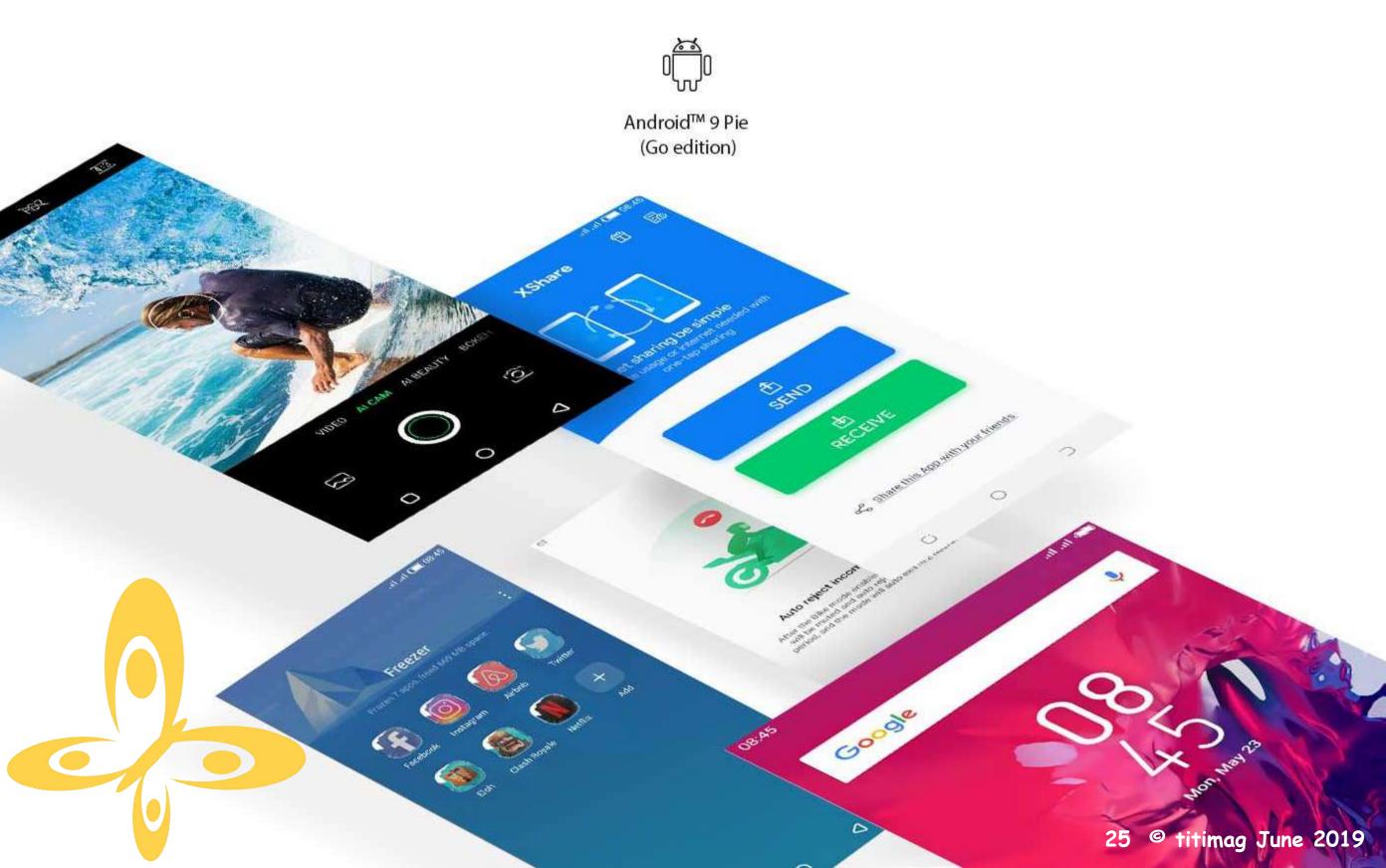
Super Stunning Selfies

The most stunning selfies that fully captures your vibrant youthful energy and passion. Brings out the very best of you through Al intelligence in different moods, and in different times, from dull cold winters to happy warm summers.



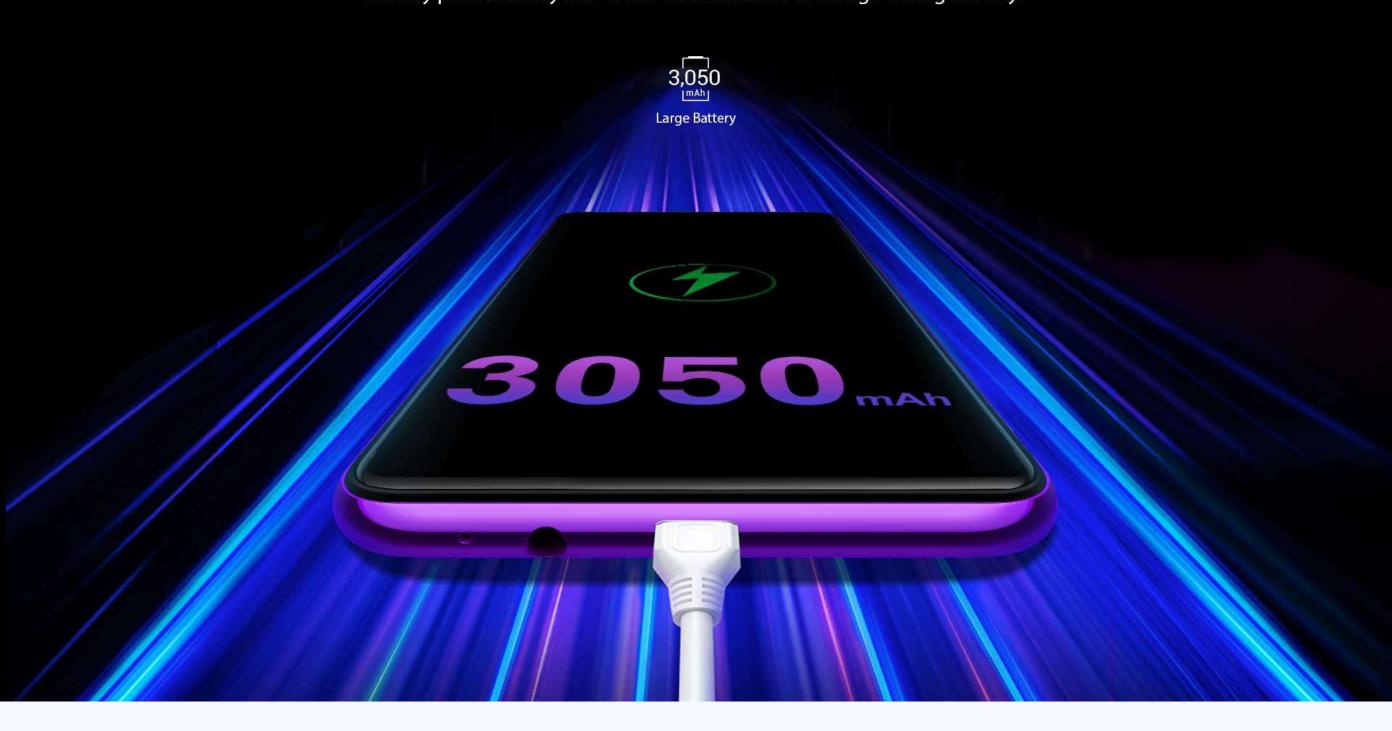
Savvy XOS Powered by Android™ 9 Pie (Go edition)

The latest system gives you optimized operations that is convenient and efficient, making the most of every inch of the apps within the smartphone. Get real time information about how often you use your phone and how much time you spend in each app.



Super Powerful Power

Enjoy your day doing the things you love all day long supported by the reliable battery power. Worry less of the constant need to charge during the day.



Simple Elegance and Style

Simplicity is the art of style. Smart 3 has endeavored to athere to the most simple design that is suitable for your lifestyle, from body size to the beautiful bright colors of blue, black, purple and red.

Modern Design







Al Bright Camera

Featured with the newly upgraded camera and the intelligent image processing, the photos taken by SPARK 3 Pro are brighter and clearer. The built-in filters can beautify the expression even in low light. With the 13MP dual rear bright camera you can capture the perfect moments whenever you like. The dual rear camera provides excellent depth of field effects. With the Al beauty mode, it heightens your natural beauty base on your age, skin tone or skin type. SPARK 3 Pro makes you sparke in every photo.



4G LTE, Faster Speed

4G LTE allows you to enjoy a smooth flow of different apps, with a more stable network signal. You can make connection to the world faster anytime, anywhere.



Quick Fingerprint Sensor Unlock your phone instally with a touch. The integrat fingerprint sensor unlocks your phone within a fraction seconds, quick and secure.

Ultimate Performance

The 2.0 GHz quad-core processor boosts speed, responsiveness and performance, powering a ultimate experience. And with the powerful CPU and bigger ROM and RAM, SPARK 3 Pro brings you a faster, stronger, and seamless smartphone experience.



AndroidTM





Latest Android™ 9 Pie

The latest Android™ 9 Pie system has improved every aspect of the system to make your life more efficient. And based on the new android system, the HiOS 4.6 is more user-friendly and more convenient, bringing you massive efficiencies and a drastically improved user experience.



Super FULLVIEW, Super Fun

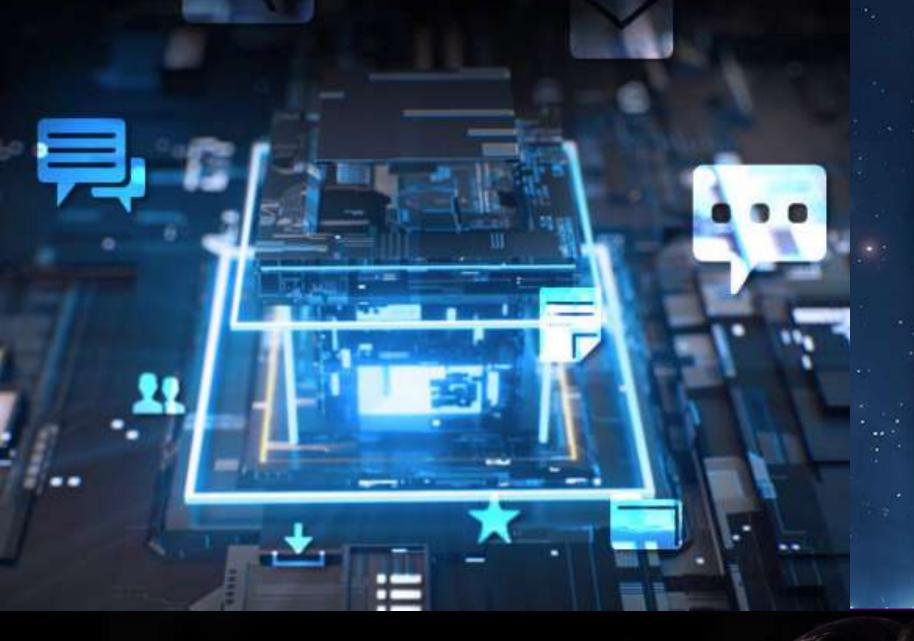
Be immersed by the 6.2" Super FULLVIEW display with remarkable screen-to-body ratio, supporting a full screen of distinct clarity and striking colour. The boardless design provides super fun and wider space to explore while you are watching TV or surfing the Internert.

Store More

With the big 32GB of storage memory, you can keep important files and data on hand conveniently. SPARK 3 Pro allows you to store a whole lot more while doing a whole lot more. The 2GB RAM provides you a great user experience.

Luminous Crystal Design

Inspired by the luminous waves of light, SPARK 3 Pro has a luminous crystal back cover. The luminous crystal design keeps up with the latest fashion trends. The artisan textures, polished glass provide a harmonious touch and feel, bringing the excitement to a whole new level. This is the feel of beauty.





Speedy Face Unlock

Light up your screen, look at the screen, unlock your phone!
Using the new secure technology, you can unlock your phone
in a instant by just a look. More secure and speedy!



The 5000 mAh battery supplies an enormous well of power, giving you the freedom of 4 days uninterrupted performance, up to 43 hours of instant calling and up to 22 hours of video playback. No need to worry about the battery problem, enjoy the utmost non-stop fun.

5000mAh

13MP Front +13MP Rear Al Camera

With the Al beauty mode, Pouvoir 3 can recognize your features and beautify them using the powerful algorithm and the adjustable front flashlight, getting amazing photos easily. With the Al HDR, the over-exposure image will be repaired automatically. It can highlight the exquisite lines of the faces to present the natural and stunning photos. The portrait boken makes you always the outstanding one in the camera. Pouvoir 3 also has the real-time filter, including eight different style, which are Fresh, Forest, Flame, Classic, Warm, Blues, Soft, Mono, meeting different beauty needs.





Big 32GB ROM

With the big 32GB of storage memory, you can keep important files and data on hand conveniently. Pouvoir 3 allows you to store a whole lot more while doing a whole lot more.



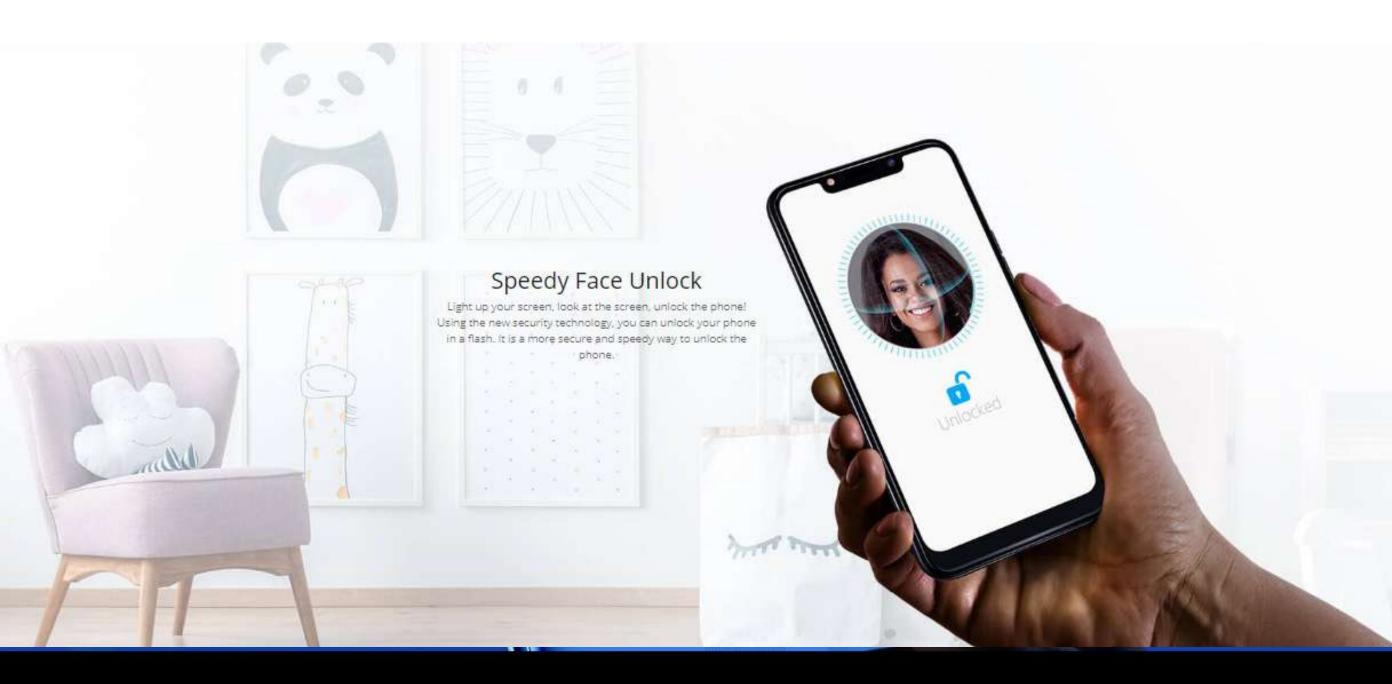
Quick Fingerprint Sensor

Unlock your phone instantly with a touch. The integrated fingerprint sensor unlocks your phone within a fraction of seconds, quick and secure.







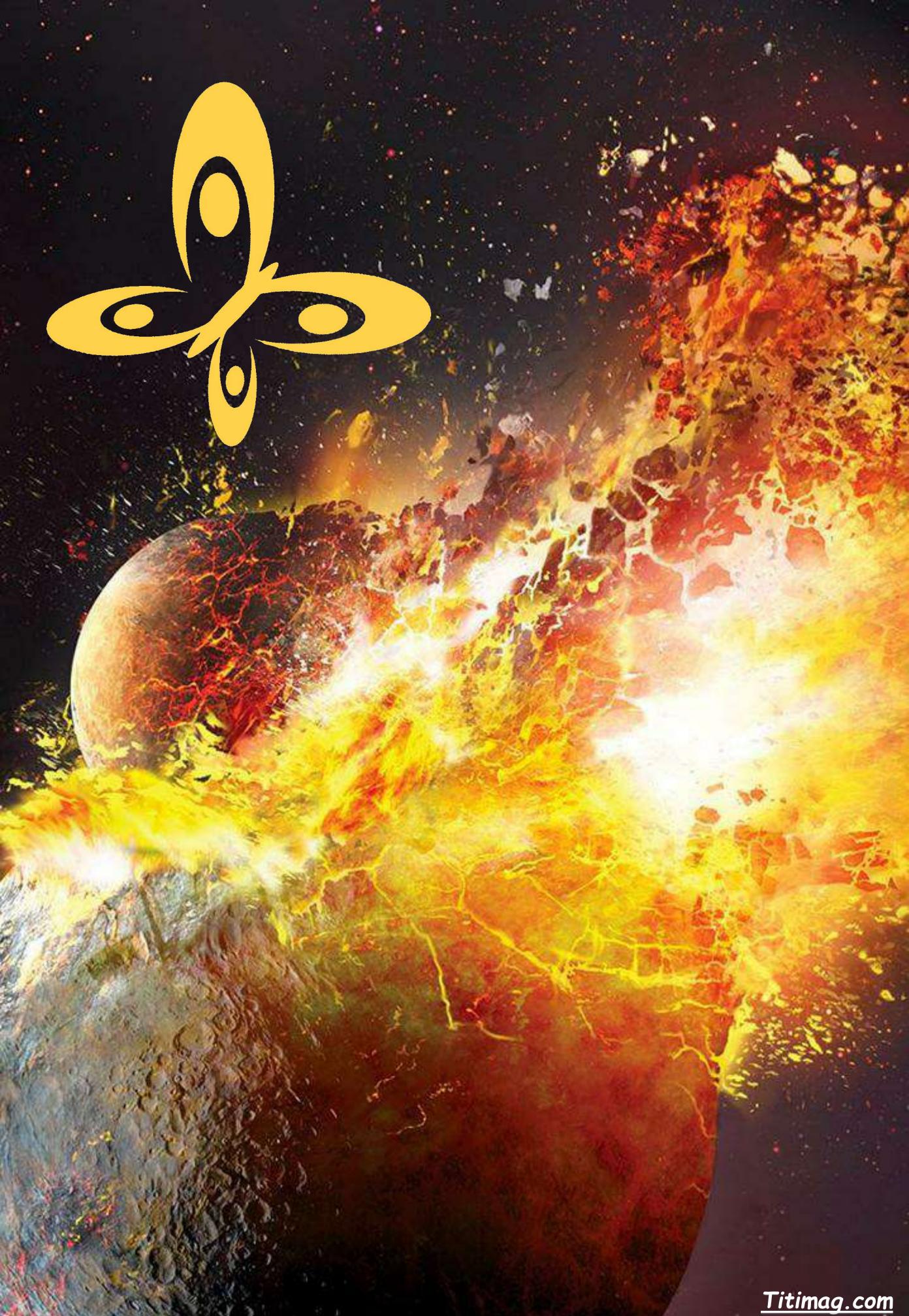


FM Loudspeaker

The Pouvoir 3 supports the speaker and earphone modes.

You can listen to the radio programme with stunning loudspeaker sound. Pouvoir 3 makes it possible for you to enjoy your favourite radio show without needing to plug an earphone in the jack.









\$78,000



Range Rover Sport is undoubtedly our most dynamic SUV ever. Performance and capability are exceptional; and a range of advanced technologies deliver an assured, confident driving experience.

With sportier design cues and a powerful, muscular stance, this is a vehicle designed for impact.







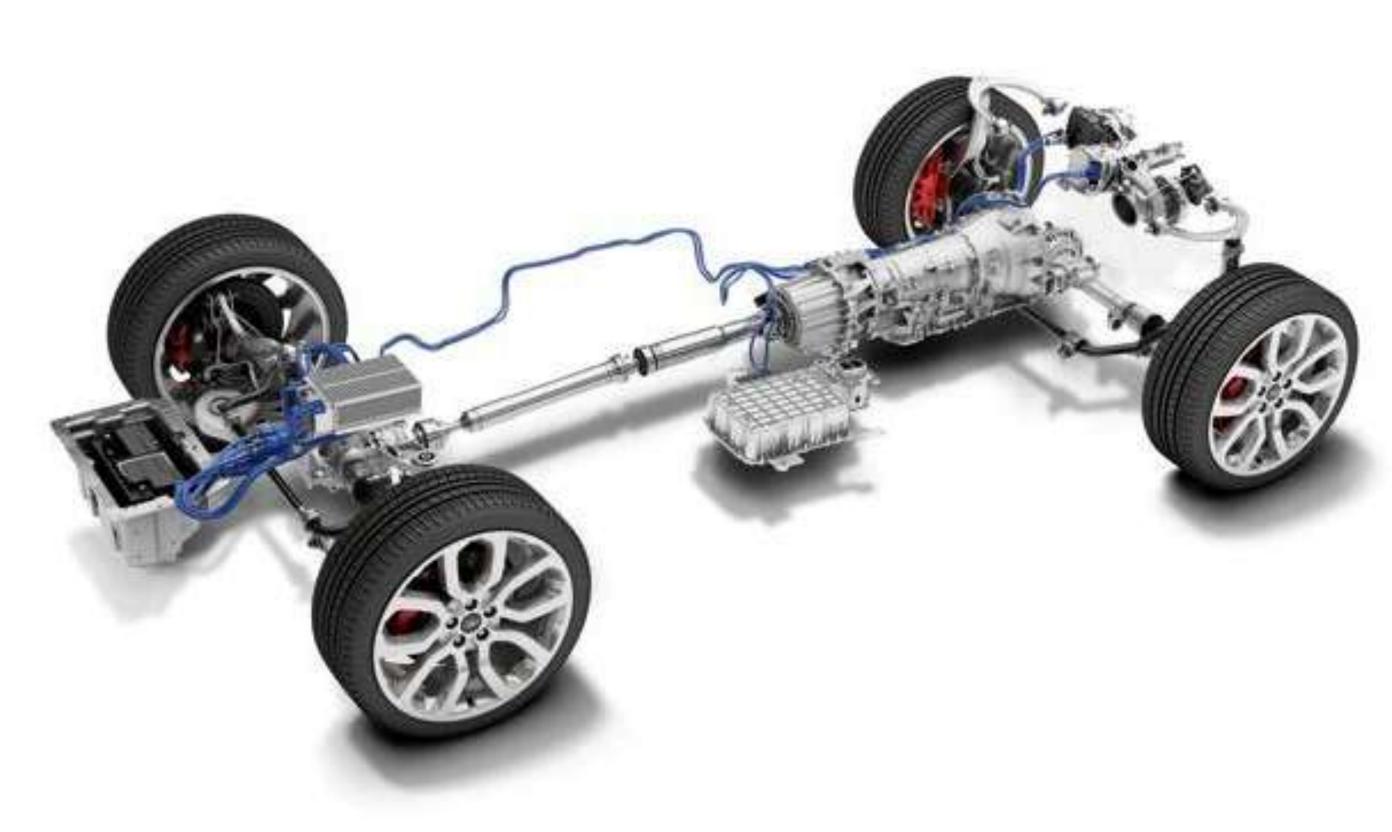


ENGINES AND TRANSMISSION

From power and sheer driving pleasure to fuel economy and refinement, there is a range of engines available for Range Rover Sport and each has been optimized for specific attributes to cater for all needs. All engines are equipped with Stop/Start technology and smart regenerative charging (except P400e); this feature prioritizes the charging of the battery when the vehicle is decelerating to capture wasted kinetic energy and reduce fuel consumption for maximum economy, especially during urban driving. Ingenium technology underpins the 4 and 6-cylinder petrol engines in the Range Rover Sport range. These low friction, all-aluminum engines have stiff cylinder blocks and twin balancer shafts to ensure inherently low levels of vibration, enabling a smooth and refined driving experience. For engine availability see pages 66-67.

8-SPEED AUTOMATIC TRANSMISSION

All engines in Range Rover Sport are coupled with an 8-speed Automatic Transmission. With eight closely spaced ratios, the transmission ensures that you are always in the optimum gear, maximizing fuel efficiency and acceleration. Gear changes are almost imperceptible and shift schedules intelligently adapt to your driving style.



MILD HYBRID ELECTRIC VEHICLE

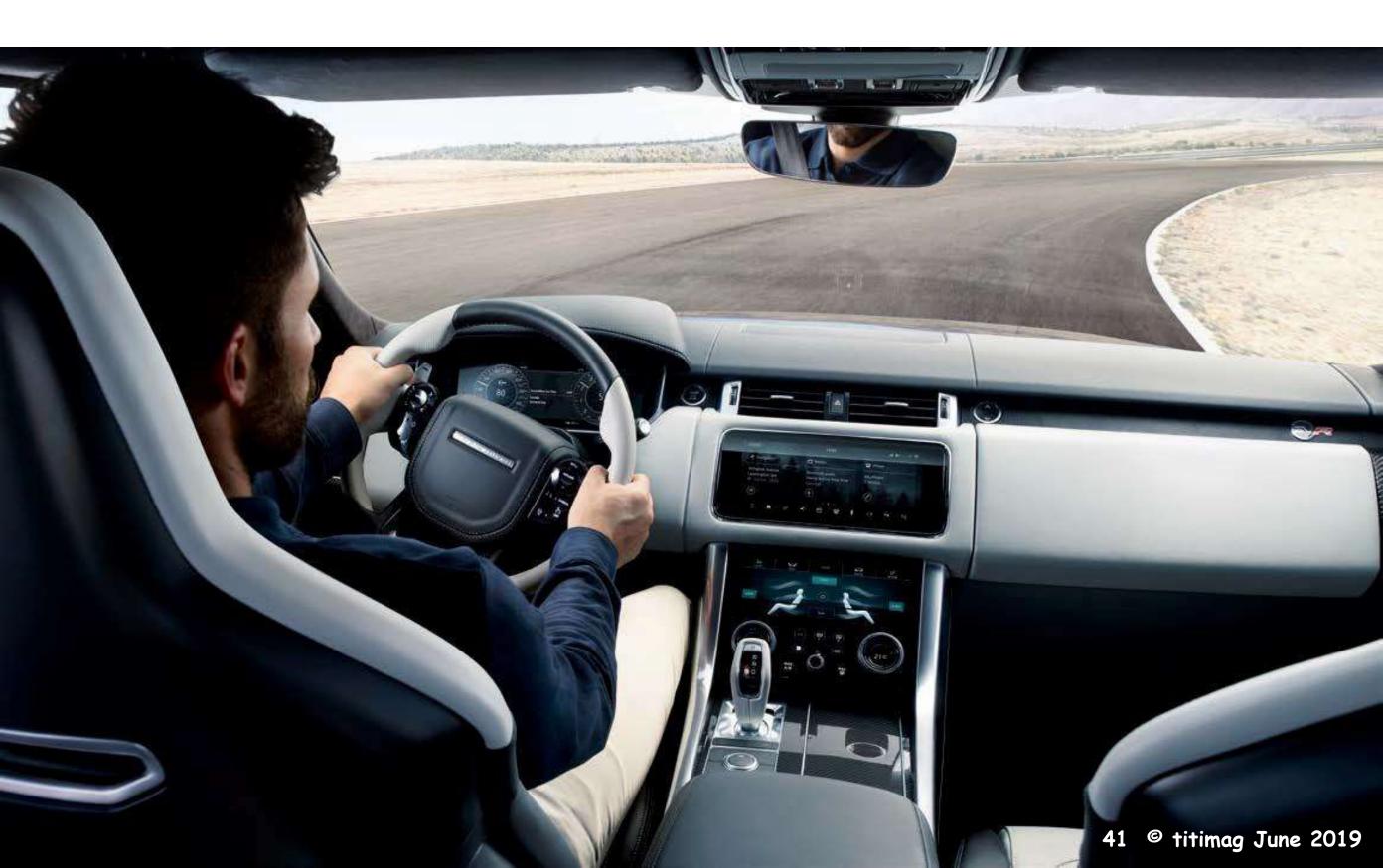
Land Rover is at the forefront of sustainable innovation. Taking our vehicles into a smarter and more exciting future, Mild Hybrid Electric Vehicle (MHEV) technology is a system that uses a belt-driven starter-generator and state-of-the-art 48V battery. These harvest energy that would normally be lost during deceleration, which is then intelligently redeployed. The stored electricity can be used by the starter-generator to provide torque assistance to the engine directly, or to power the electric Supercharger to boost performance before the conventional Turbocharger reaches its maximum output, giving seamless throttle response. This system helps improve fuel economy and boosts the vehicle's performance. The combination of MHEV technology, together with other detailed efficiency improvements, lower the CO emissions of the Ingenium In-line 6-cylinder engines substantially, when compared to the outgoing engine. The MHEV technology is standard with P400 engines. Vehicles with the P400 engine also feature Terrain Response with Dynamic Program and Configurable Dynamics, as standard. These features allow personalization of the vehicle's dynamic settings, complementing the performance characteristics of the engine.



INTERIOR

Luxurious, supremely comfortable and exceptionally functional, Range Rover Sport is a driver's vehicle through and through. The signature cockpit has been extensively reimagined; every element meticulously designed and beautifully executed. Intuitive controls include the SportShift Selector gear lever providing the option of manual gear shifting and flush touch-sensitive steering wheel switches.

The distinctive Sports Command Driving Position elevates the driver to provide a heightened sense of confidence and control, giving sweeping views over the road ahead. The seats can be specified in the finest Semi-Aniline leather with a Cut Diamond pattern in contemporary colourways – including Ebony Vintage Tan and Ebony Eclipse – to ensure this vehicle looks and feels as good as it drives.











A cleaner, more dynamic design, there's a contemporary feel everywhere you look, from the Range Rover Sport grille, bonnet vents and fender vents to the refined, yet sporty wheel options such as 22" 9 split-spoke Gloss Dark Grey with contrast Diamond Turned finish. A dramatic, modern feel is completed by the wrap-around LED headlights with front and rear Animated Directional Indicators.







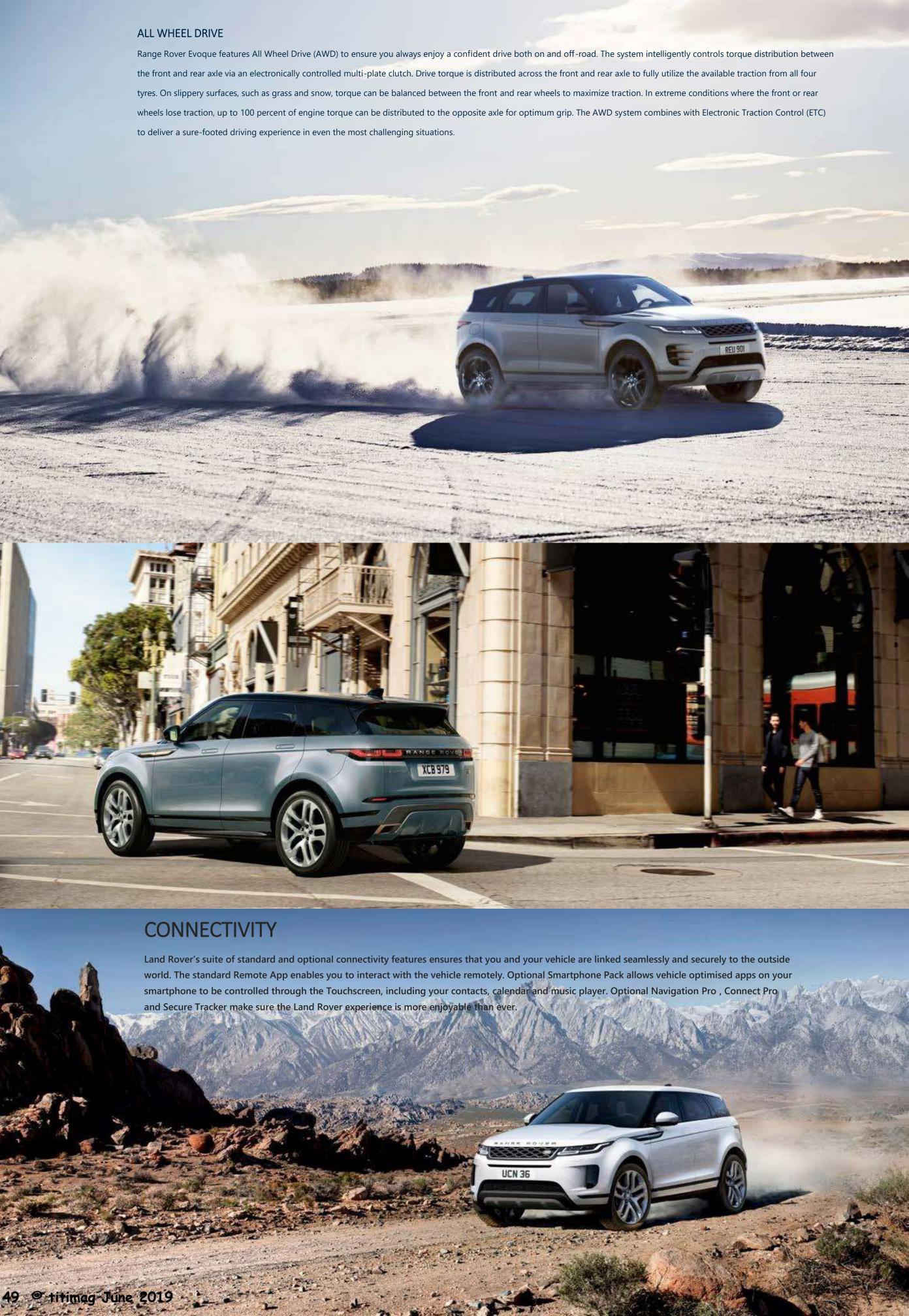
NEW RANGE ROVER EVOQUE

\$55,000











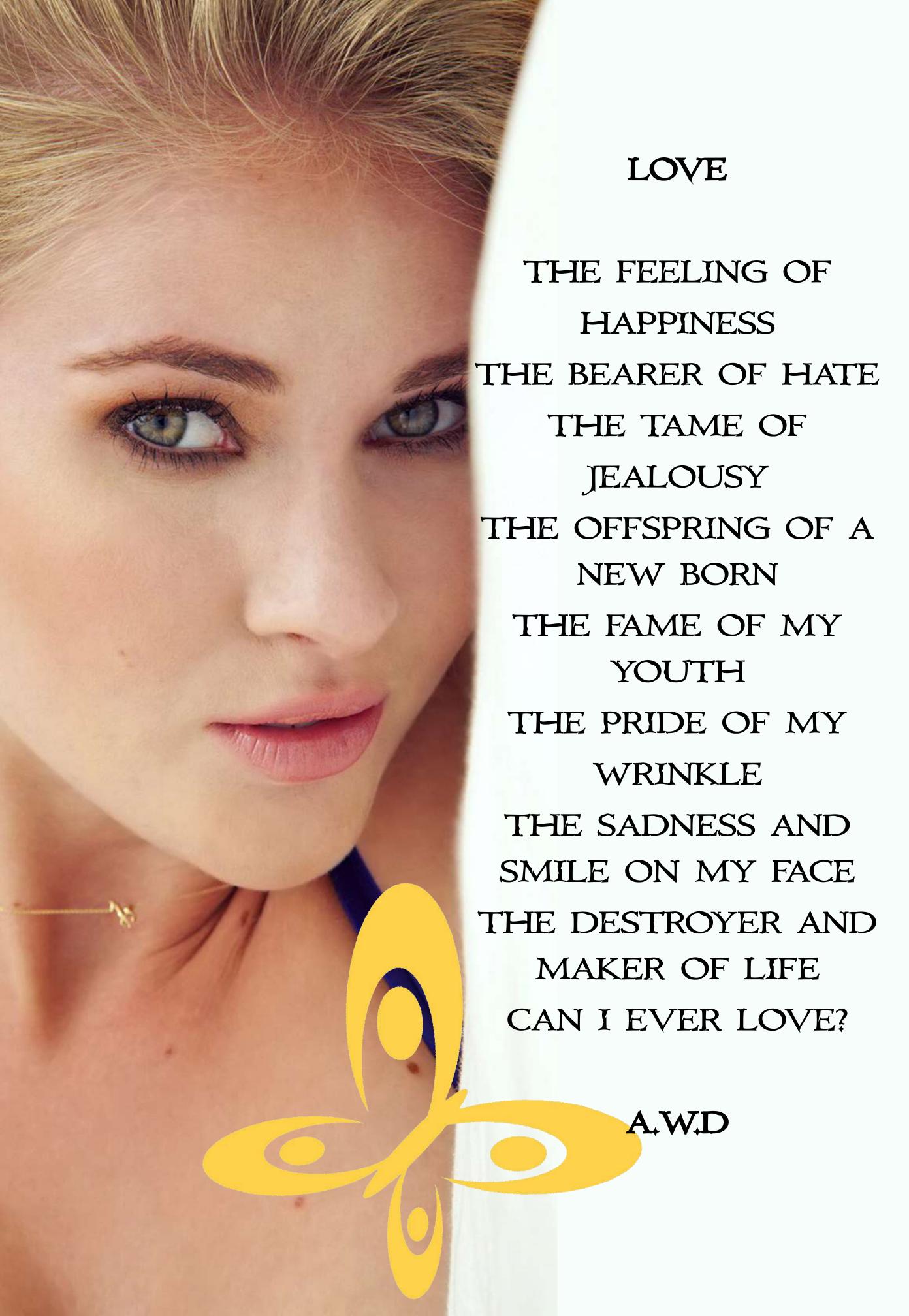


Torque Vectoring by Braking delivers controlled, responsive cornering by reducing near-limit understeer through controlled braking of the inside wheels.













A M MOTHER

A GRANT SPUTORE FILM

CLARA ROSE HILARY RUGAARD BYRNE SWANK

THRILLER





JIM JARMUSCH

THE DEAD DON'T DIE

IN CINEMAS JULY 12

THEDEADDONTDIE.CO.UK

THRILLER ***



PROJECT ITHACA

They Were Always Here



JUNE 7, 2019

ANNABELLE COMES HOME

ONLY IN THEATERS JUNE 28



THRILLER ***







UNE FEMME... PEUT EN CACHER UNE AUTRE.



JUNE 21, 2019

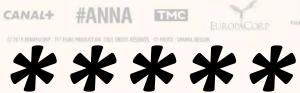


10 JUILLET







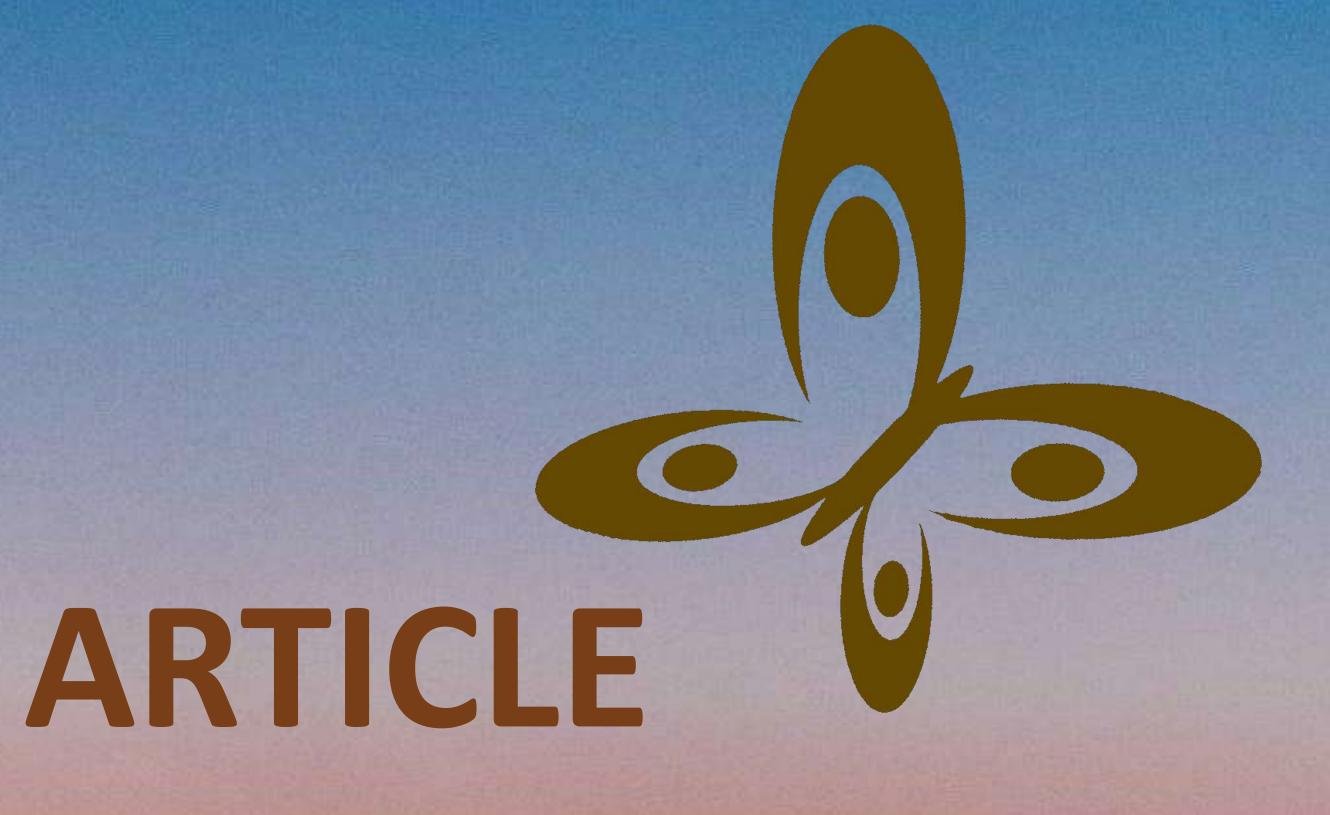












Communications satellite

The high frequency radio waves used for telecommunications links travel by line of sight and so are obstructed by the curve of the Earth. The purpose of communications satellites is to relay the signal around the curve of the Earth allowing communication between widely separated geographical points. Communications satellites use a wide range of radio and microwave frequencies. To avoid signal in-

terference, international organizations have regulations for which

frequency ranges or "bands" certain organizations are allowed to

use. This allocation of bands minimizes the risk of signal interference.

The concept of the geostationary communications satellite was first proposed by Arthur C. Clarke, along with Vahid K. Sanadi building on work by Konstantin Tsiolkovsky. In October 1945, Clarke published an article titled "Extraterrestrial Relays" in the British magazine Wireless World. The article described the fundamentals behind the deployment of artificial satellites in geostationary orbits for the purpose of relaying radio signals. Thus, Arthur C. Clarke is often quoted as being the inventor of the communications satellite and the term 'Clarke Belt' employed as a description of the orbit.

Decades later a project named Communication Moon Relay was a telecommunication project carried out by the United States Navy. Its objective was to develop a secure and reliable method of wireless communication by using the Moon as a passive reflector and a natural communications satellite.

'A communications satellite is an artificial satellite that relays and amplifies radio telecommunications signals via a transponder; it creates a communication channel between a source transmitter and a receiver at different locations on Earth. Communications satellites are used for television, telephone, radio, internet, and military applications. There are 2,134 communications satellites in Earth's orbit, used by both private and government organizations. Many are in geostationary orbit 22,200 miles (35,700 km) above the equator, so that the satellite appears stationary at the same point in the sky, so the satellite dish antennas of ground stations can be aimed permanently at that spot and do not have to move to track it. '

> The first artificial Earth satellite was Sputnik 1. Put into orbit by the Soviet Union on October 4, 1957, it was equipped with an onboard radio-transmitter that worked on two frequencies: 20.005 and 40.002 MHz. Sputnik 1 was launched as a major step in the exploration of space and rocket development. However, it was not placed in orbit for the purpose of sending data from one point on earth to another.

> The first satellite to relay communications was Pioneer 1, an intended lunar probe. Though the spacecraft only made it about halfway to the moon, it flew high enough to carry out the proof of concept relay of telemetry across the world, first from Cape Canaveral to Manchester, England; then from Hawaii to Cape Canaveral; and finally, across the world from Hawaii to Manchester.

> The first satellite purpose-built to relay communications was NASA's Project SCOREin 1958, which used a tape recorder to store and forward voice messages. It was used to send a Christmas greeting to the world from U.S. President Dwight D. Eisenhower. Courier 1B, built by Philco, launched in 1960, was the world's first active repeater satellite.



Modern communication satellites typically use geosynchronous orbits, Molniya orbits or Low Earth orbits. Earth observation satellites are satellites intended for non-military uses such as environmental monitoring, meteorology, map making etc.

Communications satellite

The first artificial satellite used solely to further advances in global communications was a balloon named Echo 1. Echo 1 was the world's first artificial communications satellite capable of relaying signals to other points on Earth. It soared 1,600 kilometres (1,000 mi) above the planet after its Aug. 12, 1960 launch, yet relied on humanity's oldest flight technology — ballooning. Launched by NASA, Echo 1 was a 30-metre (100 ft) aluminized PET film balloon that served as a passive reflector for radio communications. The world's first inflatable satellite — or "satelloon", as they were informally known — helped lay the foundation of today's satellite communications. The idea behind a communications satellite is simple: Send data up into space and beam it back down to another spot on the globe. Echo 1 accomplished this by essentially serving as an enormous mirror, 10 stories tall, that could be used to reflect communications signals.

An immediate antecedent of the geostationary satellites was the Hughes Aircraft Company's Syncom 2, launched on July 26, 1963. Syncom 2 was the first communications satellite in a geosynchronous orbit. It revolved around the earth once per day at constant speed, but because it still had north-south motion, special equipment was needed to track it. Its successor, Syncom 3 was the first geostationary communications satellite. Syncom 3 obtained a geosynchronous orbit, without a north-south motion, making it appear from the ground as a stationary object in the sky.

Beginning with the Mars Exploration Rovers, landers on the surface of Mars have used orbiting spacecraft as communications satellites for relaying their data to Earth. The landers use UHF transmitters to send their data to the orbiters, which then relay the data to Earth using either X band or Ka bandfrequencies. These higher frequencies, along with more powerful transmitters and larger antennas, permit the orbiters to send the data much faster than the landers could manage transmitting directly to Earth, which conserves valuable time on the NASA Deep Space Network.

There are two major classes of communications satellites, passive and active. Passive satellites only reflect the signal coming from the source, toward the direction of the receiver. With passive satellites, the reflected signal is not amplified at the satellite, and only a very small amount of the transmitted energy actually reaches the receiver. Since the satellite is so far above Earth, the radio signal is attenuated due to free-space path loss, so the signal received on Earth is very, very weak. Active satellites, on the other hand, amplify the received signal before retransmitting it to the receiver on the ground. Passive satellites were the first communications satellites, but are little used now. Telstar was the second active, direct relay communications satellite. Belonging to AT&T as part of a multi-national agreement between AT&T, Bell Telephone Laboratories, NASA, the British General Post Office, and the French National PTT (Post Office) to develop satellite communications, it was launched by NASA from Cape Canaveral on July 10, 1962, in the first privately sponsored space launch. Relay 1 was launched on December 13, 1962, and it became the first satellite to transmit across the Pacific Ocean on November 22, 1963.

