

# Evolution of chinese space media essay

Media



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1. China's launch of its first " Taikonaut" or " Yuhangyuan" into orbit on 14 October 2003, was not a sudden abrupt development, but logical culmination of a space programme that formally predates the " sputnik".[1]The Chinese space program is an outgrowth of China's missile technology development effort. On 8 Oct 1956, the Central Committee of the Communist Party of China, led by Mao Tse-tung, instituted the Fifth Research Academy of the Ministry of National Defense for development of space science. This marked the commencement of the People's Republic of China's space program. This was quiet remarkable considering the fact that, this happened in less than ten years of founding of People's Republic of China[2]. The Chinese space programme was officially founded with Tsien Hsue Shen as its first director in October 1956, exactly a year before Russia's first satellite orbited the Earth. Tsien therefore is rightly known as father of China's space programme.[3]

### **Milestones in China's Quest for Space**

2. China's space program can be divided into four distinguishable periods. The first period was arguably from 1956-1966, during this time the Chinese constituted a space program in spite of the set backs from Mao Tse-tung's " Great Leap Fwd" . Tsien assisted in negotiations of a 1956 accord with the Soviet Union for transfer of critical rocket and nuclear technologies to China and also the training of Chinese students in Russian universities. The Russians provided Chinese with an R-2 rocket, which was an improved version of the V-2, as starting point. But in 1960, with the Sino-Soviet split looming large, the Soviet government ceased further cooperation with China. Nevertheless, later that year, Tsien launched the first Chinese built R-2.[4]3. The second period, 1966-1976, saw China's space program keep up a

progressive track even though spheres of chinese society were being trashed by Mao's " Great Proletarian Cultural Revolution." Once the Chinese had constructed a missile in 1960, they began to devote significant resources towards development of satellites. The first Chinese satellite, known as " Mao-1 or " China-1" launched in 1970 were simple satellites weighing around 170 kg. This was followed by scientific satellite and three military ELINT satellites, the JSSW (Ji Shu Shiyang Weixing or Technical Experimental Satellites).[5]A celebrated achievement occurred on 24 April 1970 with the fruitful launch of China's first Communication satellite on the Long March-1 rocket.[6]China's first satellite the Dongfanghong-1(DFH) made China, only the fifth country to launch its own satellite into space. The Communication satellite programme was started under the nomenclature of Project 331. [7]The DFH was both larger and more capable[8], a point of pride to Chinese scientists, and setting a trend that the Chinese have sought to maintain in subsequent launches.[9]In 1975, with the Fanhui Shi Weixing (Recoverable Test satellite) under project 911, China became the third country in the world, after US and Russia, to recover a satellite. Although these recoverable satellite missions is related to civil requirements, it is believed that some of these missions were also concerned with photographic reconnaissance of a national security nature.[10]4. The third period, 1976-1986, was an unsecure period for the space program as China's recuperation from the Cultural Revolution tardily proceeded under DengXiaoping's leadership. While Mao had focused the Chinese space program on national prestige and national security, those goals changed with the accession of Deng.[11]China's space allocations were cut down to meet other aspirations. With the reduction in space expenditure (& budgeted def spending) in the early 1980s, Beijing

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empowered China's space agencies to generate financial support from other sources. Although, Chinese rocket research began in earnest in 1957 at the First Sub-Academy of the Fifth Academy of Launch Vehicle Technology was established. The first Chinese Short range rocket was launched in November 1960, however the first full range launch test of an intercontinental rocket took place more than nine years later, in May 1980. China formulated new cryogenic engines and employed a modular approach based on CZ-2 (Chang Zong-2 or Long March-2) design to build a range of 12 Long March Rocket Configurations, capable of putting upto 9200 kg into orbit.[12] On 29 Jan 1984, these newest Long March-3 launcher vehicle was showcased at the Xichang facility in south-central China. After executing successful launch, Chinese put this rocket in the commercial market. This showcased a perceptual shift from defence to civilian sector.

5. The final period of China's space development, began in 1986, and was the prime turning movement of Chinese space programme. There were not many takers of Chinese launch services until a series of mishaps occurred in 1986. They began with the calamitous loss of the United States space shuttle Challenger, accompanied by subsequent explosion of the Titan and Delta rocket launchers. Europe's Ariane was also experiencing setbacks. With increasing delays in launch of satellites, the western world turned to Russia & China, about whose capabilities they knew little at that time.

6. The China Great Wall Industry Corporation (CGWIC) actively marketed launch services since those unfortunate events. The first launches involved experimental payloads for a French company (Matra) using the Long March-2 in 1987, after that other countries also approached China for utilizing its launch services. To oversee such commercial activities, the state council set up China's Space Leading

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Group (SLG) in 1991. The SLG's primary purpose was to oversee & coordinate all space based commercial activities and also policy matters. The SLG also had the responsibility for attracting foreign contracts. The Chinese National Space Administration (CNSA), established in 1993, became the government agency for space functions responsible to the president who also is a member of the SLG.

7. Revenues earned by China's commercial launches were shared between two government organizations, the Commission of Science, Technology, & Industry for National Defense (COSTIND) & the China Aerospace Corporation (CASC). China's first 10 space launches grossed approximately \$500 million, or an average of \$50 million per launch. With relatively lower labor costs, & propped up with government subsidies, China was able to offer very attractive launch fees to the international market. China's economy got a financial boost, an influx of technology, & world recognition. However an agreement with US in 1994 restricted the pricing to be only below 15% below market prices so as to safeguard US company interests. US fabricated products on satellite launched by any other country also required an export license that was to be issued by Washington. These two factors reduced China's share of the world's space launch market. Still With the cost of each Chinese launch vehicle estimated at \$5 million to \$10 million, the commercial launch business became extremely profitable. By 1999, China had launched 7% of the total satellite put up in the world. By November 2000 China had managed to launch 27 foreign satellites into space, thus acquiring a significant share of the international commercial market.

8. Mid-1990s, saw a series of setbacks in space programme. These mishaps saw no of US satellites being destroyed and damaged. This led to a loss of confidence in Chinese

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space launch abilities. China then enforces an exhaustive program overhaul dealing with quality control & launch safety, which were ascertained by independent international quality checks also. These steps bore fruit in terms of better quality assurance from the Chinese. During these incidents, Chinese space programme were extensively evaluated US firms of Loral Space & Communications Company & Hughes Space & Communications Company, Loral also formed a inspection committee of representatives from various aerospace companies to appraise China's probe of the launch failiures. The Loral report gave feedback to the Chinese which surmised the causes of failure. With Loral & Hughes having stakes in the future success of China's space launch program, the Chinese in effect got outside expert help from two eminent US companies. 9. In 1997 China established its first satellite monitoring station abroad in the South Pacific with the ground station, located on South Tarawa Island belonging to the Republic of Kiribati having commercial & military strategic significance. The station presently conducts a variety of missions to including satellite control, data downlinks, and data intercepts for the China satellite Launch & Tracking Control centre (CLTC). This government agency has the responsiblity to track & control China's domestic satellite through a network of locations. The South Pacific location is also ideal to track & monitor US satellite & rocket launches from Vandenberg AFB, California, & other US Navy communications. It is unconfirmed as to the existence of any related Chinese intelligence collection, but the site has raised suspicions. 10. On Oct 15, 2003 China became only the third nation capable of manned spaceflight, joining the United States & Russia in that exclusive club. Subsequently, its second manned launch, this time carrying two taikonauts occurred on October 2, <https://assignbuster.com/evolution-of-chinese-space-media-essay/>

2005. Then on Jan 11, 2007 China joined the United States & Russia in another exclusive club, becoming only the third nation to test an ASAT weapon. Those two very different events indicate Chinese space activity involving a wide spectrum of capabilities. Here the point to note is that capability are not especially hard to gauge; intentions, however, can be very difficult to discern & result in strategic miscalculations. 11. The capability further cumulated on 27 Sep 2008, when China launched third manned space craft " Shenzhou-7" carrying three taikonauts. This msn succeeded & taikonauts landed back after successful space walk.[13]

## **SPACE CAPABILITY OF CHINA**

12. China has an extensive array of space capability which range from satellite design & manufacture to launch services & on-orbit operations. China's People's Liberation Army (PLA) has given three tasks to its space units: observation/intelligence, navigation/positioning and communications. The focus is on those space capabilities which have the possibility to improve the overall effectiveness of their armed forces. 13. Before dwelling on the space capability, it is imperative to know the ground based systems which forms part of space program & play a very vital role. Presently the chinese space program ground segment consists of three elements: launch sites, launch vehicles, Telemetry, Tracking, & Command (TT&C) & space surveillance sites.

### **Launch sites[14]**

14. China currently has three primary satellite launch centers, each designed to handle specific types of missions. The Xichang Launch Center, located in Sichuan Province in southern China, supports all launches into geostationary <https://assignbuster.com/evolution-of-chinese-space-media-essay/>

orbit. The two launch pads at Xichang recently underwent extensive modernization & expansion in order to handle new rocket variations as well as sp commercial customer needs. 15. The Jiuquan Space Facility, located in Kansu Province near the southern edge of the Gobi Desert, was first designed to support surface-to-surface & surface-to-air missile test & operational launches. In April 1970 China launched its first satellite, a DFH-1 communications satellite, into orbit from Jiuquan. The facility now has three pads used to launch satellite into low altitude, posigrade orbit with inclinations greater than 40 degrees. 16. The Taiyuan satellite Launch Center, located in Shanxi Province 250 miles southwest of Beijing, has a single pad from which satellites are launched into sun-synchronous orbit & polar orbits. The site is also used for Inter-Continental Ballistic Missile (ICBM) and Submarine Launched Ballistic Missile (SLBM) tests. 17. There are indications that China may soon undertake construction of a new, fourth, launch facility in the southern coastal province of Hainan. This location would help alleviate log & safety problems associated with the existing sites. This site is likely to be operational by 2013.[15]

## **Launch vehicles**

18. Chinese satellite launch vehicle capability is an offshoot of its ballistic missile program & features the Long March series of rockets. Barring an occasional failure in 1996 to launch US Intel satellite, the Long March series has undertaken 67 successful orbital insertions since then, making a total of 107 successful launches, with the launch success rate being 93.5%, at par with international standards. The success rate of India's PSLV, with 11 out of



13 successful launches is 84. 6%. The details of China's launch progress is as under[16]:-

**2001**

**2002**

**2003**

**2004**

**2005**

**2006**

**2007**

**2008**

China0208091006071003India020102010201030219. China has developed a relatively impressive inventory of launch rockets for its military & commercial satellites. China currently can launch the following max payloads:(a)LEO 25, 000 kg.(b)Polar Orbit 2, 500 kg.(c)GEO-Transfer 4, 000 kg. 20. China has the capability to launch major payloads into all militarily useful orbits, giving them the potential to provide all their launch needs domestically. It is evident that China stands to gain more commercially by providing a sound launch & satellite market for the increasing number of aspiring space-faring nations that do not have launch facilities. Developed indigenously by the China Academy of Launch Vehicles Technology (CALT), the " Long March" carrier rockets fall into four series, with 11 working models[17].

## **TT&C and Space Sv[18]**

21. This capability allows personnel on the ground to track rockets & payloads in flight, assess conditions during launch, and take corrective actions. The TT&C sites enable ground controllers to communicate with satellite in orbit to assess satellite health, command orbit & payload adjustments, as well as other activities. The space surveillance portion of this ground element provides position and orbit data to assist authorities in keeping track of their own, as well as other nation's satellites. China currently employs appx 20, 000 personnel within its TT&C & space surveillance system. The primary facility is the Xian satellite Monitor & Control Center. Additional sites are located at each launch facility as well as numerous sites dispersed across China, including some mobile & ship based systems. Recent upgrades include the addition of S-band track radars & the addition of new tracking stations. Also, China recently completed an agreement with Sweden for a mutual ground station support program. This is in addition to space-related cooperation agreements already worked with other nations.

## **Chinese Mil space capability[19]**

22. Imagery. General Fu Quanyou, while he was the PLA's Chief of General Staff, wrote that commanders need to have a full picture of the battlefield, & China must " make energetic efforts to development advanced means of intelligence-gathering & reconisance & improve the ability to obtain & process information" to " thoroughly understand the enemies situation." Satellite imagery looks to meet these demands. 23. China's program for satellite imagery, known as their Jian Bing (" Pathfinder") program, has been

active since 1975. China is on the third & fourth generation of this program, & the two current systems differ most distinctly by how the satellite data is obtained by the analyst. The Jian Bing-3 (JB-3) imagery satellite sends its images electronically, allowing the analyst to get the data in near real-time. The system is also known as Zi Yuan-2 ("Resource", ZY-2), & it was first launched without prior announcement in September 2000. The ZY-2 came from the ZY-1, the Chinese-Brazilian Earth Resources satellite, a remote sensing satellite discussed later. The Chinese announced the ZY-2 satellite was for civil purposes such as crop yield assessment; however, it is believed to be primarily used for military purposes. 24. An effective satellite imagery system relies on more than just having space-based imagery capability. It also depends on being able to process & analyze the data. The Remote Sensing Ground Station near Beijing is the main centre for China's imagery processing, & this station directly receives the data from the ZY-2 & other satellites. China has been processing & analyzing their own & other nations' imagery for decades, starting with their FSW-1 program in 1975 up to today's improved FSW-3 & the real-time imagery from the ZY-2 program. China has the facilities & the experience for imagery analysis, & they have integrated these capability into their joint military exercises. Space capability cannot be effectively employed in military operations unless they are exercised with the combat forces ahead of time to develop effective tactical, technical & procedures for use during combat. The Chinese realize this & have exercised their reconnaissance capability in their annual joint force exercise at Dongshan Island in the Taiwan Strait. 25. The JB-3 is believed to have two-meter resolution capability using digital imaging technology. The third satellite in the series was launched in November 2004, & when the <https://assignbuster.com/evolution-of-chinese-space-media-essay/>

Xinhua News Agency announced the November launch, it also mentioned the previous two satellites, launched in September 2000 and October 2002, were also operational. The Chinese are also working to improve their capability. The Shenzhou 5 manned capsule which the Chinese launched in October 2003 had a digital imaging experiment on board capable of 1.6 meter resolution. Jian Bing-4 (JB-4) is a film-based system which de-orbits to allow the film to be developed and analyzed. The Chinese officially call the JB-4 the Fanhui Shi Weixing-3 ("Recoverable satellite", abbreviated FSW), and it comes from a long line of satellite that have been launched & improved since 1975. The previous version of the FSW-3 held over 2000 meters of film, & open source information reports the FSW-3 has one meter resolution. On-orbit duration is either roughly 18 days or 26 days, depending on the altitude of the satellite with the lower orbit providing shorter on-orbit duration but better resolution imagery. 26. To supplement this indigenous imagery capability, China has reached agreements to receive imagery from numerous commercial imagery firms, including the U. S. LANDSAT, France's SPOT, Russia satellite imagery & Israel's EROS-A one meter resolution satellite.

[20]27. Synthetic Aperture Radar(SAR). The remote sensing satellite launched on Apr 27, 2006, is believed to be China's first launch of a satellite carrying a space based Synthetic Aperture Radar (SAR). For over a decade, China had been planning to put a high resolution SAR satellite in orbit for all-weather targeting applications, particularly the location of naval forces in the Taiwan Strait. China has also taken interest in the potential civil applications of such a system in the aftermath of the flooding, landslides, & typhoon damage in 1994. While China has used optical & infrared imaging space-based civil remote-sensing system, there is particular interest in active

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microwave imagery that can penetrate southern China's constant cloud cover. It is believed that China's space based SAR system development has benefited from its cooperation with Russia & Europe in this field, while Canada helped it to upgrade its existing image processing facilities for SAR image processing in 1993. 28. China launched a second SAR satellite named JB-5-2/YGW-3 on 12 Nov, 2007, while the missing number in the series, the YGW-2, was launched in may 2007 & is purported to be the electro-optical component of the JB-5 series. 29. The PLA views SAR satellite imagery as vital in its ability to achieve info dominance in future warfare. Unlike the conventional passive optical imagery satellites, the space based SAR system can see through clouds, rain, fog & dust in order to detect targets on ground or underground, & at or under water. In addition, SAR satellites are extremely useful in tracking moving targets, & can be useful in satisfying military mapping requirements. Chinese engineers have been examining SAR satellites as a means to tracking enemy submarines in shallow waters. 30. In one of the joint exercises, 18, 000 PLA forces practiced beach landings, establishing " air dominance", & attacking aircraft carriers using their Su-27s, Su-30s, SOVREMENNY-class destroyers, SS-N-22 supersonic anti-ship missiles, & various tactical & cruise missiles. One of the objective specifically called out was " satellite reconnaissance & tracking." In addition, China has developed means to counter satellite detection of their forces sufficient to mask detection from space assets. China has been improving their counter-reconnaissance capability, & they continue to exercise it. Specifically, exercising counter techniques was one of the objective for the 2004 Dongshan Island exercise. 31. Electronic Intelligence.[21]Like their imagery program, the Chinese have decades of experience with satellite-

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derived electronic intelligence (ELINT). China started their space-based ELINT program in 1975, & the last confirmed space-based ELINT satellite was on-orbit in 2002. China has a strong ELINT program in terms of ground, air & ship-based ELINT collectors; however, its space-based ELINT capability has been limited & sporadic. 32. The Shenzhou program is primarily focused on China's manned space efforts, but prior to the manned missions the Shenzhou spacecraft also acted as a space-based ELINT collector. Shenzhou 1 to 4 all flew with an ELINT payload with Shenzhou 2 through 4 carrying three antenna attached to booms at the front of the orbital module & seven feed horns on the bottom of the module. These orbital modules remained in orbit for 18 months, & a Chinese official reported that the purpose of the Shenzhou 4 ELINT payload was to intercept radar & telecommunication traffic signal. The Shenzhou sent the data from the ELINT payload to the Remote Sensing Ground Station in Beijing. However, little Chinese space-based ELINT activity has occurred since the Shenzhou 4. 33. Reviews of open literature on Chinese space programs reveal no ELINT collector currently on orbit; however, one on line source believes the Shijian ("Practice") scientific satellite launched in Sep 2004 possibly has an ELINT mission, & previous Shijian missions have performed ELINT collection. Regardless, China is interested in ELINT satellite programs & the ability to transmit data directly to mobilise data reception equipment with military units. 34. Military satellite Communication.[22]One of the main focus areas in China's 11th Five-Year Plan(FYP) has been the development & launch of communication satellites with increased service life & enhanced bandwidth, to cater to the increased needs of its burgeoning civil & military customers. Presently, China operates a series of commercial satellites like China Star, Asia Sat, Apstar, Sino Sat & <https://assignbuster.com/evolution-of-chinese-space-media-essay/>

the military series like the China Sat or the Feng Huo. 35. Post Gulf war, with emphasis on force modernisation, the PLA perceived that secure, redundant communications are critical if the PLA is to achieve its stated objectives of winning local war under "informationalised" conditions. Though commercial communication satellites programs may enhance military communications, they will not provide access to military specific technical such as jammer resistance & spread spectrum transmission. Hence, in spite of having an extensive fibre optic communication network & limited bandwidth on its DFH satellites for military use, the PLA proposed a network of five defence communication satellites(China Sat 21-25). The first one, launched in Jan 2000, was given the military designation of Feng Huo-1(FH-1) & consist of C4I system. This network would enable PLA commanders to communicate to their in-theatre forces in near real time, & also enable data transfer with all units under joint command, in addition to providing the Chinese military with a high speed & real-time view of the battlefield, thereby enabling effective command & control the satellites would reportedly provide the military with both ' C' & UHF band communications. 36. China launched a second satellite based on the advanced DFH-3 bus in Nov 2003, featuring a no of new technology, including the first Chinese satellite to provide the Ku band communication; the first to use the advanced multiple steerable spot beam antenna technology to enable ground users to communication while on move; the first to use secured uplink transmission for satellite antennae control & the most powerful on board data processing capability. A third in the series was launched in 2006. 37. Thus, once fully deployed, the FH series constellation would establish space-based military tactical communication networks to support China's military operations & provide its ballistic

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missiles, cruise missiles , aircraft & ships a seamless tactical-to-strategy targeting capability. Studies are underway to development a Global Mob satellite Information Sys(GMSIS), which would provide personal hand held communication via 18 to 24 satellites in medium orbits. 38. Satellite Navigation. China is deeply involved in projects to improve their satellite navigation capability. They have development their own navigation satellite program. China does not want to be dependent on foreign systems, therefore, they are creating their own navigation satellite constellation. 39. The Chinese Beidou (" Big Dipper") system consists of thirty five satellites & a spare in geosynchronous orbit & is intended only to provide regional coverage around China. The first two on Orbit spacecraft were the first generation of their satellite navigation system, & the Beidou-3 satellite launched in May 2003 was the next step toward a second generation system. According to the Beidou's chief designer, the current system is intended " mainly to serve transportation, shipping, distribution of material & other services" - namely, users on the ground. 40. China uses & is also heavily involved in development other nation's satellite navigation programs. China is a partner with the EU, India & Israel on the Galileo satellite navigation program. Beijing does expect that working with Europe will boost Chinese satellite development & other aerospace technology. Finally, China is a heavy user of GPS in civil applications such as fishing, public bus & taxi monitoring, seismic monitoring, & telecommunication network timing. Militarily, potential chinese use of differential GPS in ballistic & cruise missiles offers significant accuracy improvements and increase their effectiveness as stand off coercive weapons. Overall, China is looking to improve the robustness of their satellite navigation capability - indigenously

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& using foreign system. 41. Meteorological Satellites. China began its efforts to development its own weather satellite in the late 1960s & launched its first meteorological satellite in 1988. Today, the Chinese have two meteorological satellite systems. The Fengyun-1 (" Wind & Cloud" – FY-1) is a low earth orbiting system, & the Fengyun-2 (FY-2) is a geosynchronous system. The FY-1's capability are similar to the U. S. LANDSAT, & it was replaced by the FY-3 which was launched in May 06. 42. It is evident that with every launch, capability performance will witness greater improvement. Improved meteorological data leads to improved civil applications, but it also provides improved operational data that is vital when planning an amphibious attack or air strikes. 43. Remote Sensing satellite. Remote sensing program are crucial for achieving the info superiority - the Chinese military desires. China has two indigenous remote sensing satellite programmes: the Haiyang (" Ocean") system & a cooperative program with Brazil called the China-Brazil Earth Resources satellite (CBERS). 44. China launched the 365-kg Haiyang-1 (HY-1) satellite in 2002 in a tandem launch with the FY-1D satellite. The HY-1's msn is to provide China with a maritime surveillance capability without having to rely on foreign system. The spacecraft has an ocean water colour scanner with a resolution of 1. 1 km and a visible light imaging system with a resolution of 250 m. The maritime surveillance msn of the HY-1 involves observing sea conditions such as surface temprature, currents, silt, pollutants & sea ice. China's National Ocean satellite Applications Center has ground stations in Beijing and at Sanya on the southern tip of the island of Hainan; however, commands from these ground stations are sent to the Xian satellite Monitor & Cont Station for uplink to the satellite. 45. The CBERS, also known as ZY-1 launched in 1999

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& 2003 showed increased sophistication with its multi-payload & digital transmission capability. The payload included an infrared multi-spectral scanner & a visible light imager capable of 20 m resolution images, & the satellite can be controlled at ground stations in Brazil or China. In Sep 2000, China & Brazil signed an agreement for two more CBERS satellite with 5 meter resolution & improved redundancy. In addition, they agreed to investigate building a joint geosynchronous weather satellite and a communication satellite. The data from CBERS is processed in China at the Remote Sensing Ground Station along with data from Landsat (U. S.), ERS (European Space Agency), the Japanese Earth Resources satellite, SPOT (France), Radarsat-1/2 (Canada), & the Indian Remote Sensing satellite. 46. Microsatellites.[23]China realized the potential use of microsatellites in both civil & military applications & joined the bandwagon of microsatellite development in the late 1990s & the first microsatellite, Tsing maneuver & rendezvous with another nano maneuver. The Tsinghua-1 is a precursor to a larger 07 satellite Tsinghua constellation aimed at providing high resolution imagery. Microsatellite efforts were later formalized & financed under the aegis of the 10th FYP. Under the 10th FYP. A major project, " high performance microsatellite ground observation technique & associated applications" was provided. Beijing-1 and Tsinghua-2 was a product of the same project. The Tsinghua-2, launched in Oct 2005, has a resolution of 4 meters & a swath of more than 600 meters which is of significant military value. 47. These developments of microsats could allow for a rapid reconstitution or expansion of China's satellite force in the event of any disruption in coverage, given an adequate supply of boosters. The primary military appeal of microsats lies in the fact that they are expendable, cheap

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to produce & launch & are flexible & difficult to detect. In the years to come, microsatellites will increasingly become the mainstay for shaping the battlefield by providing a cheap & affordable option in an operationally responsive space environment for carrying out the entire spectrum of military space missions ranging from "force enhancement" to "counter space operations." Nevertheless, their gainful military utility maneuver accuracy as well as commensurate launch capability which China is hoping to acquire through its mobile & air launched versions of the 'Pioneer.'

### **Counter Space Capability[24]**

48. Space deterrence has been a major consideration behind Beijing's development of counter space program. The goal of this deterrence is to ruin an opponent's economy, its C4ISR network &, thus, the ability to function in space. For deterrence to be credible, one must demonstrate the capability &, hence, ASAT test in Jan 2007. The test drew much international criticism for the debris creating element as well the blatant attempt at "weaponising space." Though the ASAT does not fall within the purview of existing definition to be called a "space weapon," one needs to look at the test in a more pragmatic manner. 49. Space was "militarized" five decades ago & the "weaponization" of space has already taken place. Though, there are no weapons deployed in space, the satellite in space are integral to the weapon system on earth. For that matter, all the long range ballistic missiles in the world, as well as the Chinese ASAT are really "space weapons" because even they may not be launched from space, they are launched into space & transit through space to their targets. In a broader sense, even tools for jamming satellite transmission could be counted as "space weapons" as

they unquestionably bring war to space. Putting the ASAT test into perspective, it emerges that the test did not, in any way, change the geo strategic balance in Asia or globally. But the test did not demonstrate the offensive missile technology & limits of that technology by China. 50. The US, which had prior information of the test, chose to play along & did not lodge any international protest for its own self-serving purposes. The test help the US galvanise support for its space based ballistic missile defence & legitimized the shooting down of one of its own satellite, the US-193, in Feb 2008 in the garb of saving lesser mortals from the harmful effects of the hydrazine fuel carried by the satellite. 51. The kinetic ASAT test was not a one-off development but a carefully orchestrated plan to reinforce the beliefs of the vulnerabilities to US space assets, as articulated by the Rumsfeld Commission in 2001. Apart from this, the test was also an attempt by China to bring the US to the negotiating table for an arms control agreement which it has so far been unsuccessful in doing, along with Russia, at the United Nations. China gambled that it can stop the US from development space based weapons under the guise of arms control agreements while it can continue to do so, given the opaque nature of its defence spending & research & development. 52. The ASAT test & the dazzling of an American satellite by ground based laser in 2006 are the only visible attempts by China to target spaced based assets. If official policy statements are to be treated as indicators of government intent, then China has been discreetly shifting its position since 2002 from opposing militarization of space to opposing the weaponization of space, thus, removing the political hurdle to its own space use in such applications as reconnaissance, navigation & positioning for military purpose. 53. Hard Kill Means. The means to be <https://assignbuster.com/evolution-of-chinese-space-media-essay/>

adopted by China for hard kill envisage :-(a)Co-orbital Ballistic Missiles. A strategic ballistic missile which is a multi-task, multi-role attack weapon capable of implementing random orbit transfer from earth orbits & can serve the functions of an intercontinental ballistic missile, an ASAT, & an orbital bomber weapon.(b)Orbital space mines which will detonate when they come in contact with the adversary's satellite in their orbit.(c)Development of ASAT weapons to be launched from submarines or surface ships to provide it a flexible option of destroying the adversary's space assets.(d)Physical destruction of an adversary's ground control infrastructure. 54. Soft Kill Means. The means to be adopted by China for soft kill envisage :(a)Electronic jamming & blinding of satellite in orbit as part of temporary & reversible means through ground based laser attacks.(b)A thermo-nuclear explosion in LEO to disable the satellite by electro magnetic pulse.(c)The jamming of inter-satellite & satellite-to-ground station downlink/uplink which will degrade the C4ISR network of an adversary. 55. With the US moving ahead on its space based ballistic missile defence program, a " counter ASAT" weapon called Attack Identification Detection Reporting System (Raids) Bloc 20 & the prompt global strike weapons, China can be expected to follow suit to enable it to maintenance the space deterrence.

## **Space Situation Awareness**

56. For a nation to operate in space, it needs to be aware of where their spacecraft are located as well as other objects in space. The Chinese space tracking system uses a number of ground stations inside & outside China & the four Yuanwang satellite tracking ships mentioned above. China's space surveillance capability are limited; however, they are probably sufficient to

track most U. S. satellites. Reports in the Chinese technical press indicate their network can determine orbits to the " meter precision level."

Meanwhile, the ESA & China are cooperating to design a network which will provide satellite observation data, & China will continue to improve its satellite tracking network. All this indicates the Chinese understand the need for a space object tracking system & they can keep track of their own spacecraft, debris which can threaten their manned and unmanned spacecraft and U. S. or other foreign system which can observe actions within China.[25]