Russia, China to Set Up Pilot Zone to Test National Navigation Systems

Russia and China are set to establish a pilot zone to test the Russian GLONASS and Chinese BeiDou satellite navigation systems on passenger and freight transportation routes going through Kraskino - Hunchun and Poltavka - Dongning checkpoints on the border in Russia's Primorsky Territory, the Russian Transport Ministry said. The issue was discussed during a meeting of a bilateral working group on road transport and roads.

"[Russian and Chinese] delegations appreciated the work carried out on the project of using GLONASS and BeiDou navigation systems in the area of international road transportation. The sides agreed to create the pilot zone to test them on passenger and freight transportation routes, which pass through the Kraskino - Hunchun and Poltavka - Dongning checkpoints," the statement read.

The sides also discussed the possibility of opening a new international route going through Russia's Novosibirsk, Irkutsk and Zabaykalsk cities and Chinese cities of Manzhouli, Yingkou and Dalian, according to the statement.

Read more in *GPS Daily* article.
http://www.gpsdaily.com/reports/Russia_China_to_Set_Up_Pilot_Zone_to_Test_National_Navigation_Systems_999.html
2017-07-21

Good Coordination Begins With Good Coordinates

Numerous survey and mapping agencies in Asia and the Pacific are modernising their geospatial reference systems (GRSs).

Although the drivers for such changes vary, governments in this region have begun to appreciate geospatial information management and its vital role in decision making, policy development and sustainable growth. More specifically agencies now view GRSs and geodetic or “positioning” infrastructures as essential components of a spatial data framework that represent the reference layer for land, marine and space based information.

It is without doubt these perspectives have progressed and gained momentum through the formation of the United Nations Committee of Experts on Global Geospatial Information

Management (UN-GGIM), the UN resolution on Global Geodetic Reference Frames, and UN's endorsement of using geospatial data to measure the success of Sustainable Development Goals. With encouragement from the International Federation of Surveyors (FIG), emerging or developing economies in the Asia and the Pacific regions have leveraged these UN initiatives to establish, maintain or improve their GRSs, and to improve the capacity of surveyors and land professionals for GRS modernisation.

FIG describes capacity development as a process of identifying the challenges or obstacles that impede an individual/organisation/community from accomplishing their objectives; and then developing the necessary knowledge/skills/competencies/frameworks to achieve them. FIG also considers capacity development involves learning to adapt to change (or shifting paradigms); understanding how decisions are made; and that change management is supported by resources and the political commitment to achieve results.

Read more in *Spatial Source* article. http://www.spatialsource.com.au/company-industry/good-coordination-begins-good-coordinates
2017-07-27

One Plant At A Time Is Precise

Precision farming is set to become even more precise with a new camera drawing on satellite imaging. Thanks to research with ESA on new cameras, hyperspectral cameras flying on drones are now able to see details as small as 4-5 cm.

Three customers are already using the first version of the ButterflEYE LS camera: in Denmark for biological diversity studies, in Australia for agricultural research, and in Italy for providing commercial data to farmers. The experiences will be fed back into the final commercial version.

"Our first customers were really keen on getting the high resolution, which is the best you can currently get from a hyperspectral product," notes Rene Michels, CEO of Germany's airborne specialist Cubert, who collaborated with Belgium's VITO Remote Sensing and imec for the camera development.

http://www.seeddaily.com/reports/One_plant_at_a_time_is_precise_999.html
2017-07-27

Australia's First GPS Infrastructure Officially in Space

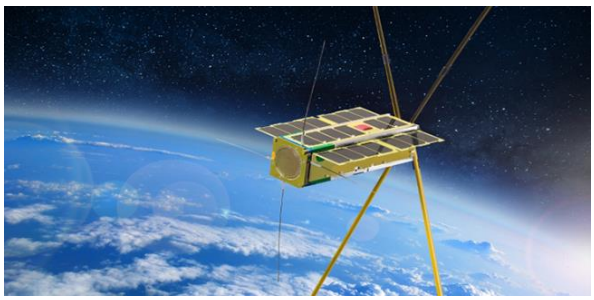
This has been a productive year so far for Australia in terms of GPS breakthroughs, but plans are in place for the country to continue to make big strides in GPS technology and precise positioning programs.

Spatial Source — Australia and New Zealand's first website covering the geospatial, surveying, GIS and mapping communities — reports that Australia officially has its first GPS infrastructure in space, according to the nation's Minister for Defence Industry Christopher Pyne.

A four-kilogram, U.S,-developed Biarri-Point cubesat was launched as part of the QB50 constellation in April 2017 towards the International Space Station (ISS), alongside three other Australian research cubesats.

Biarri-Point was deployed in May from the ISS into its own low Earth orbit (LEO), carrying the Namaru GPS technology — the first fully Australian and New Zealand GPS payload for a cube-satellite. According to *Spatial Source,* Minister Pyne said Biarri-Point is now successfully transmitting its findings back to Earth.

Read more in *Inside GNSS* article. http://insidegnss.com/node/5558
2017-07-25



GPS Expert Scott Pace Named to National Space Council

Scott Pace, a grand master of space policy with particular expertise in satellite navigation, has been chosen by the White House to be executive secretary of the newly revived and potentially powerful National Space Council. "Ever since the Trump Administration indicated that it would re-establish the Space Council," wrote Marcia Smith of spacepolicyonline.com, "his is virtually the only name rumored to be in the running to serve as the head of its staff."

The GPS community knows Pace well. Currently the director of the Space Policy Institute and a professor of the practice of international affairs at George Washington University, he serves as a special counselor to the National Space-Based Positioning, Navigation, and Timing (PNT) Advisory Board — the nation's leading panel of GPS experts.

"He's a great choice," said Brad Parkinson, the first director of the NAVSTAR GPS Joint Program Office and a vice chair of the Advisory Board. Parkinson, who has known Pace for some two decades, described him as a dedicated servant of the citizens of the United States who tries hard to always do the right thing. "He has, I know, not only impressed me," said Parkinson, "he's impressed virtually anyone he's dealt with."

Pace served as NASA associate administrator from April 2005 to August 2008 and assistant director for space and aeronautics in the White House Office of Science and Technology Policy from 2001-2002. He was a senior analyst at RAND for nearly eight years, joining the company after stints as a senior scientist at the Department of Commerce and a technician at the Jet Propulsion Laboratory.

Read more in *Inside GNSS* article. http://www.insidegnss.com/node/5545

2017-07-17

South East Asia a Hotspot for European GNSS

As home to over 600 million inhabitants, many technically skilled experts in the area of satellite technology, and a fast-growing economy, South East Asia is a hotspot for global business – and GNSS is no exception. In fact, thanks to its unique geographic position, where it is able to receive all GNSS signals (and even some EGNOS signals), South East Asia is developing into a regional ‘GNSS Valley’.

To help ensure European GNSS' spot at this table, the Horizon 2020-funded BELS project conducts a range of coordinated activities to raise awareness and build capacities for the exploitation of E-GNSS technologies in South East Asia. The BELS consortium brings together 12 European, Asian and Australian partners, including European companies with a presence in the region, as well as leading universities. Together, these partners concentrate on three core objectives:

1. Opening new markets to EU companies
2. Increasing awareness of E-GNSS technology through workshops
3. Increasing the technical expertise of people in the region

One of the project's core focuses is to promote Galileo and how it can benefit the region. This work is particularly important as the region lacks its own satellite navigation capabilities and is thus dependent on other national or regional systems. "There's a lot of competition coming from Russia, China and Japan – each looking to tie South East Asia to their GNSS system," says Matteo Vannucchi from the BELS coordination team. "However, the majority of these systems are military-based or controlled, which of course raises concerns for users in the region."

https://www.gsa.europa.eu/newsroom/news/south-east-asia-hotspot-european-gnss

2017-07-06

First GPS Signal Received 40 Years Ago Today

Working well after midnight on 19 July in 1977, a Rockwell Collins engineer named David Van Dusseldorp sat on the rooftop of a company building in Cedar Rapids, Iowa, adjusting an antenna every five minutes to receive a signal from the world's first GPS satellite known as NTS-2. Within a small window of time, the satellite was turned on and the message was successfully received and decoded by the team working the pictured GPS receiver.

Since then, the technology has grown to be the standard of navigation around the world and touches nearly every part of our daily lives. To commemorate the 40-year anniversary, Rockwell Collins invited retirees involved in the project to share their firsthand stories at an event held in Cedar Rapids on 19 July. "We had leaders and team members working together and I knew we could meet the challenge put before us," said Van Dusseldorp. "The future of GPS was uncertain at the time, but I really felt like we had just accomplished something important."

Read more in *GPS World* article. http://gpsworld.com/first-gps-signal-received-40-years-ago-today/?utm_source=utm_source=professionaloemuav&utm_medium=utm_medium=email&utm_campaign=utm_medium=email_07192017&eid=376813635&bid=1816687

2017-07-19

Just One Small Step For Australia's Space Industry When A Giant Leap Is Needed

An expert review of the Australian space industry's capabilities to participate in a global market was announced last week by the Minister for Industry, Innovation and Science, Arthur Sinodinos. He said the aim is to "develop a long-term plan to grow this important and exciting sector" and report in March 2018.

Interestingly, the words "space agency" do not appear in the announcement, but this was addressed later when the minister spoke to the media.

The space community had been expecting an announcement of this sort for some time. Many expected one to be made for maximum impact at or near the International Astronautical Congress (IAC) to be held in Adelaide in September, when Australia's space community will be on show to the world.

Many also expected that the announcement would be of the establishment of an agency, rather than yet another committee and review of the industry. There seems to be at least one of these every year, with the past year alone seeing the Space Activities Act review, the Space Industry Association of Australia (SIAA) white paper and the annual State of Space report.

In commissioning a review that will not report until next March, the federal government has effectively ensured that there will be no Australian space policy of any merit to discuss at September's IAC conference.

Australia will not have a space agency, or even a plan for one, when the eyes of the space world are on us. When all that international attention has disappeared next year, the idea could be shelved yet again.

https://theconversation.com/just-one-small-step-for-australias-space-industry-when-a-giant-leap-is-needed-81100?utm_medium=email&utm_campaign=Latest%20from%20The%20Conversation%20for%20July%2019%202017%20-%2078736276&utm_content=Latest%20from%20The%20Conversation%20for%20July%2019%202017%20-%2078736276+CID_56b652df8023d88da6ca5dea1bd241cc&utm_source=campaign_monit

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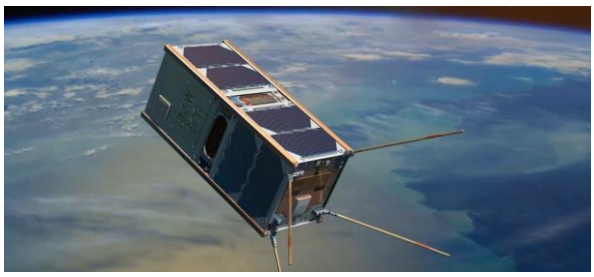
2017-07-18



Mass GPS Spoofing Attack in Black Sea?

An apparent mass and blatant, GPS spoofing attack involving over 20 vessels in the Black Sea last month has navigation experts and maritime executives scratching their heads. The event first came to public notice via a relatively innocuous safety alert from the U.S. Maritime Administration:

A maritime incident has been reported in the Black Sea in the vicinity of position 44-15.7N, 037-32.9E on June 22, 2017 at 0710 GMT. This incident has not been confirmed. The nature of the incident is reported as GPS interference. Exercise caution when transiting this area.

But the backstory is way more interesting and disturbing. On June 22 a vessel reported to the U.S. Coast Guard Navigation Center:

GPS equipment unable to obtain GPS signal intermittently since nearing coast of Novorossiysk, Russia. Now displays HDOP 0.8 accuracy within 100m, but given location is actually 25 nautical miles off; GPS display…

After confirming that there were no anomalies with GPS signals, space weather or tests on-going, the Coast Guard advised the master that GPS accuracy in his area should be three metres and advised him to check his software updates.

https://maritime-executive.com/editorials/mass-gps-spoofing-attack-in-black-sea

2017-07-11

Expert GPS Panel: New Ligado Plan Still Harms GPS

The nation's leading GPS experts said in a newly released letter that a controversial broadband network would still interfere significantly with GPS receivers despite revisions to the network plan. The right choice, the group advised key administration officials, is to protect GPS, which underlies aviation and much of the nation’s other critical infrastructure.

Though the letter, which was released July 10, does not specifically name the wireless network proposed by Virginia-based Ligado Networks, the dates and information in the letter closely tracks the firm's plans, assertions and testing. **In the recommendation,** a number of statements were highlighted and printed in bold for emphasis.

The GPS community has been at odds with Ligado since 2010 when the Virginia firm proposed to a nationwide wireless system based on the rezoning of its licensed frequencies, which were allocated for Space-to-Earth Mobile Satellite Service (MSS). Named LightSquared at the time, the company asked regulators to allow it to use its MSS frequencies to support some 30,000 high-powered ground stations. However, tests in 2011 showed the LightSquared signals would overload the vast majority of GPS receivers and the Federal Communications Commission (FCC) put the plan on hold in 2012. The company filed for bankruptcy shortly thereafter, emerging in late 2015. LightSquared changed its name to Ligado Networks and presented a revised plan in 2016 aimed at limiting interference.

The new plan, however, is not sufficiently different to prevent interference, concluded the National Space-based Position Navigation and Timing Advisory Board (PNTAB) at its end-of-June meeting.

Read more in *Inside GNSS* article. http://insidegnss.com/node/5544

2017-07-11

Driverless Cars: Uber and Goget Customers Likely To Be Early Adopters

The customers of ride-sharing services like Uber and car-sharing firms such as GoGet are likely to be the first regular users of autonomous vehicles in Australia, but senior executives of both firms say there will be benefits to society from an attitude shift even before mass-scale adoption.
Tristan Sender, the chief executive of GoGet, a car-sharing business which has 2000 vehicles in its car-sharing fleet, said Australia would extract more benefits from the eventual mass-scale usage of driverless cars if there were societal attitude changes in the interim. "We will actually end up with an autonomous future with the way we want it to go," Mr Sender said on Thursday.

While there were would be substantial safety and efficiency benefits in Australia when driverless cars were in use on a large scale, an increased take-up of car sharing services would help in an attitude shift in the mean-time. Congestion could be cut in the short-term and more space freed up with a reduction in the need for car parking spaces for private owners.
http://www.afr.com/business/driverless-cars-uber-and-goget-customers-likely-to-be-early-adopters-20170629-gx13mh

2017-06-29

Europe's Galileo Satnav Identifies Problems Behind Failing Clocks

Investigators have uncovered the problems behind the failure of atomic clocks onboard satellites belonging to the beleaguered Galileo satnav system, the European Commission said Monday 3 July.

For months, the European Space Agency -- which runs the programme -- has been investigating the reasons behind failing clocks onboard some of the 18 navigation satellites it has launched for Galileo, Europe's alternative to America's GPS system.

Each Galileo satellite has four ultra-accurate atomic timekeepers, two that use rubidium and two hydrogen maser. But a satellite needs just one working clock for the satnav to work -- the rest are spares.

Three rubidium and six hydrogen maser clocks were not working, with one satellite sporting two failed timekeepers. "The main causes of the malfunctions have been identified and measures have been put in place to reduce the possibility of further malfunctions of the satellites already in space," commission spokeswoman Lucia Caudet said.

Read more in *GPS Daily* article.
http://www.gpsdaily.com/reports/Europes_Galileo_satnav_identifies_problems_behind_failing_clocks_999.html
2017-07-04

Handbook On GNSS Published By Springer

The *Springer Handbook of Global Navigation Satellite Systems* is now available.

Described as “A state-of-the-art description of GNSS as a key technology for science and society at large,” the 1,327-page tome is edited by Peter J.G. Teunissen and Oliver Montenbruck.

The handbook presents a complete and rigorous overview of the fundamentals, methods and applications of the multidisciplinary field of GNSS, providing an exhaustive, one-stop reference work and a state-of-the-art description of GNSS as a key technology for science and society at large.

All global and regional satellite navigation systems, in operation and under development (GPS, GLONASS, Galileo, BeiDou, QZSS, IRNSS/NAVIC, SBAS), are

examined in detail. The functional principles of receivers and antennas, as well as the advanced algorithms and models for GNSS parameter estimation, are rigorously discussed.

The full coverage of the field of GNSS is presented in seven parts, from its fundamentals, through the treatment of global and regional navigation satellite systems, of receivers and antennas, and of algorithms and models, up to the broad and diverse range of applications in the areas of positioning and navigation, surveying, geodesy and geodynamics, and remote sensing and timing.

Read more in *GPS World* article. http://gpsworld.com/handbook-on-gnss-published-by-springer/?utm_source=gps_survey_scene&utm_medium=email&utm_campaign=gps_survey_scene_07052017&eid=376813635&bid=1803665

2017-06-22

Double Trouble: GNSS Over-Reliance And Its Costs

When someone utters the words “I’m nearly perfect,” get on your toes. Such self-appraisal usually masks something. It could be insecurity, denial, ignorance or simply fear. At the very least, some level of illusion, if not delusion, is involved.

With that precept in mind, let’s examine a June 16 press release from the U.S. Air Force, under the headline “New reports confirm near-perfect performance record for civil GPS service.”

The press release actually says, “The U.S. Air Force released two technical reports demonstrating that the Global Positioning System (GPS) continues to deliver exceptional performance to civilian users around the world….The 2014 and 2015 performance reports confirm that the GPS Standard Positioning Service (SPS) satisfied nearly all measurable performance commitments documented in the GPS SPS Performance Standard.”

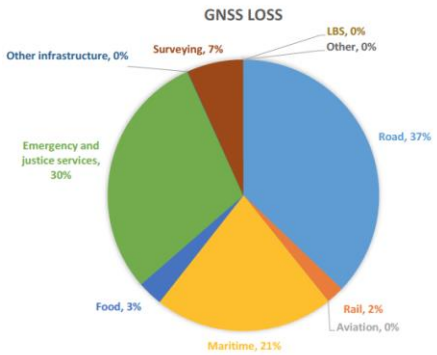
Fair enough. Those are demonstrable facts. Nowhere does the release — other than in its headline — employ the words “perfect” or “near-perfect.”

Issuing a statement in the manner done on June 16 perpetuates a dangerous myth, keeps users in the dark about the actual state of affairs, cultivates a What-Me-Worry? approach to positioning, navigation and timing, and abets the lack of political will and understanding of GNSS vulnerabilities.

A report recently compiled and released in the UK attempts to quantify the cost of a GNSS disruption, should one occur. The figure the authors came up with? 1 billion pounds sterling per day. That’s approximately $1,273,710,000. Per day.

Read more in *GPS World* article. http://gpsworld.com/double-trouble-gnss-over-reliance-and-its-costs/?utm_source=gps_survey_scene&utm_medium=email&utm_campaign=gps_survey_scene_07052017&eid=376813635&bid=1803665

2017-06-28



Autonomous Grocery Delivery Trials Demonstrate ‘Last Mile’ Capabilities

The UK’s first trials of an autonomous CargoPod vehicle have started in the Royal Borough of Greenwich.

The real world trials see the self-driving delivery vehicle operating in a residential environment, delivering grocery orders to over one hundred customers.

Taking place in the UK Smart Mobility Living Lab, the GATEway Project (Greenwich Automated Transport Environment) is a world-leading research programme, led by TRL and funded by UK Government and industry.

It aims to demonstrate the use of autonomous vehicles for ‘last mile’ deliveries and mobility, seamlessly connecting existing distribution and transport hubs with residential and commercial areas using zero emission, low noise transport systems.

http://www.commercialfleet.org/news/van-news/2017/06/28/autonomous-grocery-delivery-trials-demonstrate-last-mile-capabilities

2017-07-03

UNSW In Thrilling Rescue Of 'Lost' Aussie Satellites

Two Australian satellites, feared lost after being deployed from the International Space Station, have been recovered by UNSW engineers after weeks of a fraught, and at times heart-stopping, recovery operation.

"It was like something out of *Apollo 13*," said Elias Aboutanios, project leader for UNSW-EC0, the first Australian-built satellite in 15 years to go into space. "Our satellite was orbiting at 27,000 km/h almost 400km above our heads. We couldn't see it, couldn't inspect it, and had almost no data to work with. So we were busting our heads trying to figure out what could have gone wrong, and how to regain contact."

The UNSW ground control team, with help from ham radio operators and colleagues at the Australian National University (ANU) and the University of Sydney, regained control of both cubesats last week.

In all, three Australian research satellites – two built at UNSW – blasted off on 19 April from Cape Canaveral as part of the international QB50 mission, a swarm of 36 small satellites (known as 'cubesats') designed to explore the little-understood region above Earth known as the thermosphere.

Within 30 minutes of deployment from the ISS, both UNSW-EC0 and INSPIRE-2 were meant to transmit a beacon. But no signal was detected from either by the ground teams at UNSW's Australian Centre for Space Engineering Research (ACSER) or the ANU when the cubesats flew over Sydney, which they do twice a day.

The ACSER team began to suspect the cubesats' batteries might be to blame. In the nine months since both cubesats had been dispatched to Europe for testing, and eventually to the US for launch, they might have lost partial charge: enough that they were now unable to extend the antennas. With their antennas stowed, their beacons would now be too weak for the UNSW or ANU ground stations to detect.

Aboutanios mused: "For more than three weeks, we were looking in the wrong part of the sky for our satellite – we couldn't have known that. But the procedures we put in place, the scenarios we ran and the solutions we developed, they all paid off. You could say we succeeded by engineering *the heck* out of this."

https://newsroom.unsw.edu.au/news/science-tech/unsw-thrilling-rescue-‘lost’-aussie-satellites
2017-06-26

Emergency Services To Use GPS To Find Triple 000 Callers

Emergency services will soon be able to use GPS to find a Triple Zero caller on a mobile phone. The Turnbull Government will issue a Request for Tender (RFT) to deliver the new and improved service, following an Expression of Interest (EOI) process in 2016.

The 'next generation Triple Zero Emergency Call Service' will use integrated location services that are accurate up to five metres. The new service will speed up response time and can be used when the caller is unable to provide details of their location.

A 2015 official review of the National Triple Zero Operator system found almost two-thirds of calls to the service come from mobile phones.
The same review found location technology could be delivered through existing smartphone applications, but expressed concerns similar systems operating overseas are not reliable.

The EOI identified Advanced Mobile Location (AML) technology as the best way to provide location-based data, automatically sending the caller's whereabouts to emergency services. According to the Turnbull Government, AML technology includes built-in privacy safeguards to ensure only emergency services responding to a Triple Zero call can access location data.

http://www.huffingtonpost.com.au/2017/06/23/emergency-services-to-use-gps-to-find-triple-000-callers_a_22850794/?utm_hp_ref=au-homepage

2017-06-24

India's Answer to GPS Runs Into Serious Technical Failures

India's native navigation system has developed serious problems with four atomic clocks on the six satellites facing unexplained errors. With these, a total seven out of 21 clocks onboard have shown some difficulties.

Proper functioning of these clocks is crucial to provide accurate navigation to the Indian armed forces. Last year, the Indian Space Research Organisation (ISRO) accepted the problems with three atomic clocks onboard one of the satellites of Regional Navigation Satellite System (IRNSS).

"The clocks are ticking well. It's not possible to share the technical details of mission management for important reasons. ISRO is adopting various strategies so that best results are obtained from its satellite systems," A.S. Kiran Kumar, Chairman, ISRO told IANS earlier this month. But sources said that more atomic clocks have faced difficulties in providing data which is likely to be compensated with the launch of a replacement satellite in near future.

Read more in *GPS Daily* article.
http://www.gpsdaily.com/reports/Indias_Answer_to_GPS_Runs_Into_Serious_Technical_Failures_999.html
2017-06-28

Second Lockheed Martin GPS-3 Satellite Assembled As Full Production Begins

In a specialised cleanroom designed to streamline satellite production, Lockheed Martin is in full production building GPS III - the world's most powerful GPS satellites. The company's second GPS III satellite is now assembled and preparing for environmental testing, and the third satellite is close behind, having just received its navigation payload.

In May, the U.S. Air Force's second GPS III satellite was fully assembled and entered into Space Vehicle (SV) single line flow when Lockheed Martin technicians successfully integrated its system module, propulsion core and antenna deck. GPS III SV02 smoothly came together through a series of carefully-orchestrated manufacturing maneuvers utilising a 10-ton crane.

GPS III SV02 is part of the Air Force's next generation of GPS satellites, which have three times better accuracy and up to eight times improved anti-jamming capabilities. Spacecraft life will extend to 15 years, 25 percent longer than the newest GPS satellites on-orbit today.

Read more in *GPS Daily* article.
http://www.gpsdaily.com/reports/Second_Lockheed_Martin_GPS_3_satellite_assembled_as_full_production_begins_999.html
2017-06-28