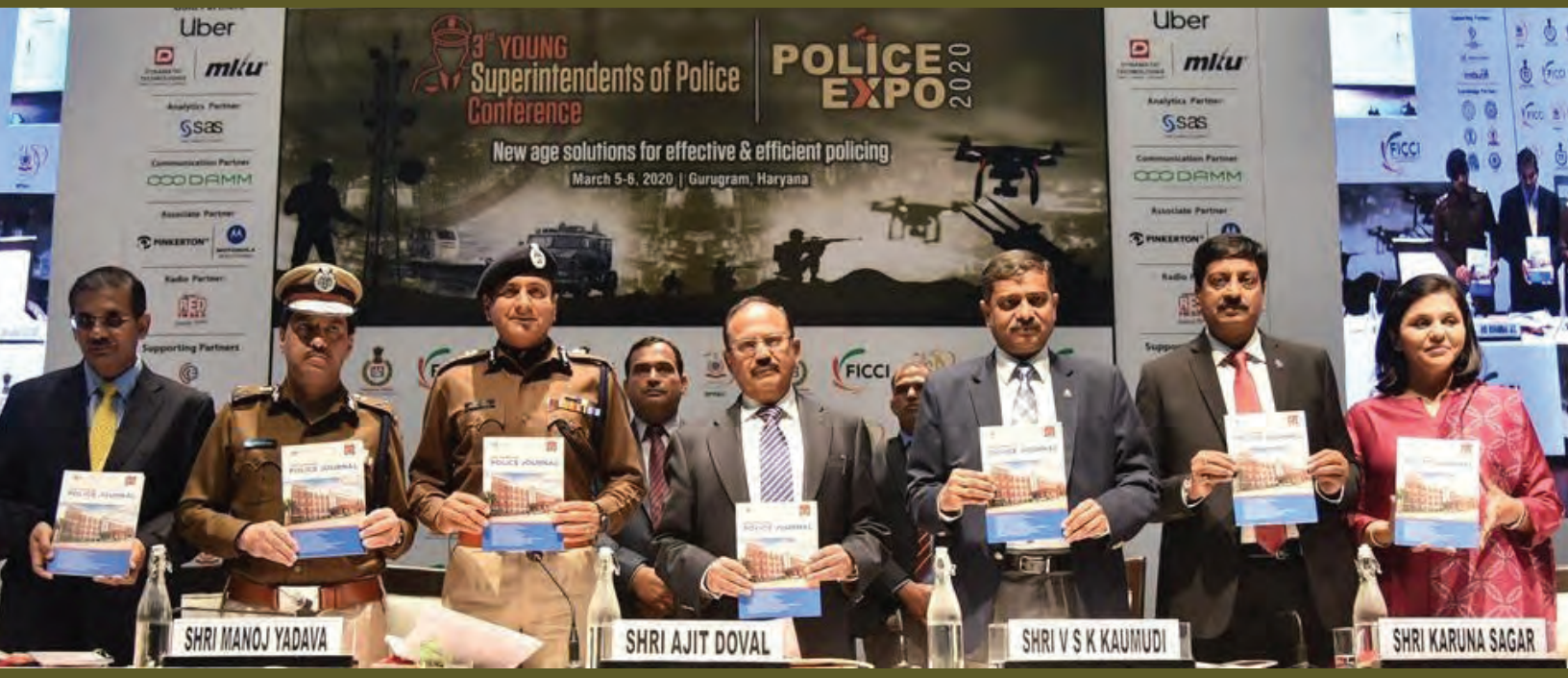
PROCEEDINGS OF

3RD NATIONAL CONFERENCE FOR YOUNG SUPERINTENDENTS OF POLICE FROM STATEs / UTs AND COMMANDANTS OF CAPFs

MARCH 5 & 6, 2020



BUREAU OF POLICE RESEARCH & DEVELOPMENT

PROMOTING GOOD PRACTICES & STANDARDS



3RD NATIONAL CONFERENCE FOR YOUNG SUPERINTENDENTS OF POLICE FROM STATEs / UTs AND COMMANDANTS OF CAPFs

PROCEEDINGS

March 5-6, 2020
Apparel House, Sector 44, Gurugram, Haryana

BUREAU OF POLICE RESEARCH & DEVELOPMENT
PROMOTING GOOD PRACTICES & STANDARDS

National Highway – 08, Mahipalpur, New Delhi-110037

The contents of the book has been compiled by BPR&D

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Printed at Creative Edge

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FOREWORD



The Modernization Division of the BPR&D organized the 3rd National Conference for Young Superintendents of Police from States/UTs and Commandants of CAPFs on **March 5 & 6, 2020,** in association with the Haryana Police. This Conference was clubbed with a two-day Police Expo.

The Theme of the Exposition and the Conference was **"New Age Solutions for Effective & Efficient Policing"** and aimed at creating awareness among the Young Superintendents of Police and Commandants about the latest technologies in the areas, such as, Body Armour, Mine Protective Vehicles (MPVs), Less than Lethal Technologies, Advanced Weaponry, Latest Communication Equipment, Surveillance Equipment, Coastal Security, Drone & Anti-Drone Technologies, Cyber Security/ Cyber Crime Management and Big Data & Predictive Analytics for effective delivery of Police Services to citizens. More than 250 Young Superintendents of Police from across the country and other senior Police officers participated and benefitted immensely.

The Conference was inaugurated by **Shri Ajit Doval, KC, National Security Advisor, GoI,** and the plenary address was delivered by **Shri Manohar Lal, Hon'ble Chief Minister, Haryana.**

A Screening Committee, consisting of experts and senior police officers, was constituted by the Bureau for evaluating the products and technologies of the exhibitors and the Report submitted by the Committee is part of the Proceedings.

I am happy to share the Proceedings of the Conference through this booklet. I am thankful to all the speakers, the young officers and guests for their active participation and contribution to this Conference.

(V.S.K. Kaumudi)

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Executive Summary



This **Young Superintendents of Police Conference** was third in row and traces its origins to a resolution passed during the DsGP/IsGP Conference - 2015, which suggested that young officers need to train junior colleagues on the latest technologies, techniques in investigation and trends in crime, etc. The Bureau organizes 'Young Superintendents of Police Conference and Police Expo', annually.

The Bureau has organized the 3rd Young Superintendents of Police Conference and Police Expo – 2020, on March 5 & 6, 2020, at Gurugram, Haryana, in association with the Haryana Police, under the guidance of Shri V.S.K Kaumudi, DG, BPR&D, and Shri Manoj Yadava, DGP, Haryana Police. The theme of the Conference and the Exposition was **'New Age Solutions for Effective & Efficient Policing'.**

The event was inaugurated by **Shri Ajit Doval, KC, National Security Advisor, GoI,** and the plenary address was delivered by **Shri Manohar Lal, Hon'ble Chief Minister, Haryana.**

The Conference covered important topics such as **Big Data for Intelligence and Cyber Crime Prevention, Next Generation Technologies for SMART Police Cops** and provided a forum to young leaders of the LEAs for sharing their experiences and innovative ideas for improvement in Policing.

Along with the Conference, a two-day Police Exposition was also organized, which focused on the latest technologies in the areas, such as, Body Armour, Mine Protective Vehicles (MPVs), Less than Lethal Technologies, Advanced Weaponry, Latest Communication Equipment, Surveillance Equipment, Coastal Security equipments, Drone & Anti-Drone Technologies, Cyber Security/Cyber Crime Management and Big Data & Predictive Analytics for effective delivery of Police Services to citizens.

During the Exposition, **154 different products / technologies were showcased.** A Screening Committee, consisting of experts and senior police officers, was constituted for evaluating the products and technologies of the exhibitors. The Screening Committee report is part of the Proceedings.

About 250 participants, including Young Superintendents of Police & Commandants from CAPFs, Senior Police Officers, other dignitaries, representatives of academia and industry participated in the event.

(Karuna Sagar)



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3rd Young Superintendents of Police Conference & Police Expo-2020
March 5-6, 2020 | Apparel House, Sector 44, Gurugram, Haryana

MINUTE TO MINUTE PROGRAMME

Day 1: March 05, 2020

Time	Session
0900 – 1000 Hrs	**Registration & Tea/ Coffee**
1000 – 1015 Hrs	**Arrival of Chief Guest and Inauguration of Police Expo-2020**
1015 – 1135 Hrs	**Inaugural Session** *Lamp Lighting & Inauguration of 3rd Young Superintendents of Police Conference* Welcome Address: Shri Manoj Yadava, IPS, Director General of Police, Haryana Special Addresses: • Dr. Sangita Reddy, President, FICCI • Shri V.S.K. Kaumudi, IPS, Director General, BPR&D **Inaugural Address: Shri Ajit Doval, KC, National Security Advisor, Govt. of India** *Presentation of mementos* Vote of Thanks: Shri Karuna Sagar, IPS, Director (Modernization), BPR&D *Session moderated by Shri Sumeet Gupta, Assistant Secretary General, FICCI*
1135 – 1230 Hrs	**Group Photograph with Young Superintendents of Police** **Visit to Exhibition & High Tea**
1230 – 1330 Hrs	**Session 1: Big Data for Intelligence and Cyber Crime Prevention** *In this session, the panelists will discuss on how Big Data and Data Analytics technologies can increase the investigative capabilities of the Police Forces in many relevant aspects, including: war on crime & terror, defense from cyber-attacks, public safety, disaster and mass incident management, and development of predictive capabilities.* **Chair: Shri Anish Dayal Singh, IPS, Additional Director, Intelligence Bureau** Distinguished Speakers • Big Data & Open source Intelligence Col. Haridas M, CEO & Co-Founder, DataVal Analytics • Big Data for Intelligence and Crime Prevention Shri Radhakrishna B, Director - Risk & Fraud Management Practice, SAS India
1330 – 1430 Hrs	**Visit to Exhibition & Networking Lunch**

Time	Session
1430 – 1530 Hrs	**Session 2: Next Generation Technologies for SMART Police Cops** *India needs a long term and focused approach to develop technology and solutions to meet its internal security challenges- especially to address the contemporary requirements of CAPFs and State Police Forces. This session aims at highlighting the advancements in technology for SMART Policing which could be deployed by various law enforcement agencies.* **Chair: Shri Jayanto N. Choudhury, IPS (Retd), Former DG, NSG** Distinguished Speakers • Drone & Anti-Drone Technologies for Law Enforcement Agencies Lt. Gen. Sanjeev Madhok, PVSM, AVSM, VSM, Head of Defence Business, Dynamatic Technologies • Smart Border Management - Technologies for Perimeter Security Shri Rajiv Mehrotra, Chairman, Vihaan Networks • Police Communication Shri Raghav Chaudhari, Head Business Development, South & South East Asia, Motorola Solutions
1530 – 1700 Hrs	**Session 3: Best Practices in SMART Policing** *This session will feature presentations on leading policing initiatives across the country. Such initiatives can help cross exchange of learnings and experiences across state police forces and other law enforcement agencies and will help in adoption of the best practices to further improve policing in the country.* **Chair: Shri G.K. Pillai, IAS (retd.), Former Union Home Secretary, Govt. of India** Distinguished Speakers • Best Practice in Road Safety & Traffic Management Shri Himanshu Garg, IPS, SP, Yamuna Nagar & Former DCP/Traffic, Gurugram / Initiative: Road Safety & Traffic Management in Gurugram • Best Practice in Public Grievance Redressal Shri Siddharth Kaushal, IPS, Superintendent of Police, Prakasam District, Andhra Pradesh / Initiative: SPADANA • Best Practice in Crowd Management during Mega Events Shri Alok Sharma, IG, Special Protection Group, Uttar Pradesh / Initiative: Management of Kumbh Mela
1700 – 1830 Hrs	**Visit to Exhibition**

Day 2: March 06, 2020

Time	Session
0900 – 1000 Hrs	Registration & Tea/ Coffee
1000 – 1115 Hrs	**Session 4: Internal Security: Key to Making India a $5-trillion Economy** *With 130 crore people, India is an attractive investment destination for the global market. Hence, internal security becomes an important factor for the growing economy. In this session, the panelists from different walks of life will share their view points on why internal security is important for achieving a $5-trillion economy.* **Chair: Shri Rahul Chaudhry, Chair, FICCI Homeland Security Committee** Distinguished Speakers • Smt Harjinder Kaur Talwar, President, FICCI FLO • Smt Amrapali Chavan, German Bakery Bomb Blast Survivor • Smt Kiran Dham, Managing Director & CEO, Globus Infocom
1115 – 1130 Hrs	**Break**
1130 – 1230 Hrs	**Plenary Session** **Welcome Address:** Shri Manoj Yadava, IPS, Director General of Police, Haryana **Address and Summing up** report of 3rdYoung Superintendents of Police Conference and Police Expo - 2020: Shri Karuna Sagar, IPS, Director (Modernisation), BPR&D **Addresses:** • Shri Rahul Chaudhry, Chair, FICCI Homeland Security Committee • Shri V.S.K. Kaumudi, IPS, Director General, BPR&D **Plenary Address: Shri Manohar Lal, Hon'ble Chief Minister, Haryana** **Vote of Thanks:** Shri Muhammad Akil, IPS, Commissioner of Police, Gurugram *Session moderated by Shri Sumeet Gupta, Assistant Secretary General, FICCI*
1230 – 1300 Hrs	**Reserve**
1300 – 1430 Hrs	**Networking Lunch**
1430 – 1700 Hrs	**Visit to Exhibition**
1400 – 1700 Hrs	Performance by Police Bands



Bureau of Police Research & Development
Ministry of Home Affairs

PROCEEDINGS

MARCH 5 & 6, 2020

The Bureau of Police Research and Development (BPR&D), Ministry of Home Affairs, organised the **3rd Young Superintendents of Police Conference and Police Expo – 2020, on March 5 & 6, 2020, at the Apparel House, Sector 44, Gurugram, Haryana,** in association with the Haryana Police, under the guidance of Shri V.S.K Kaumudi, DG, BPR&D, and Shri Manoj Yadava, DGP, Haryana Police. The Conference was third in row and traces its origin to a resolution passed during the DsGP/IsGP Conference - 2015, which suggested that young officers need to train junior colleagues on the latest technologies, techniques in investigation and trends in crime, etc.

2. The theme of the Conference and the Exposition was **'New Age Solutions for Effective & Efficient Policing'**. The event was inaugurated by **Shri Ajit Doval, KC, National Security Advisor, GoI,** and the plenary address was delivered by **Shri Manohar Lal, Hon'ble Chief Minister, Haryana.**

3. The objective of the Conference and Exposition was to create awareness among Young Superintendents of Police from States / UTs Police and Commandants from CAPFs about the latest technologies in the areas, such as, Body Armour, Mine Protective Vehicles (MPVs), Less than Lethal Technologies, Advanced Weaponry, Latest Communication Equipment, Surveillance Equipment, Coastal Security, Drone & Anti-Drone Technologies, Cyber Security/Cyber Crime Management and Big Data & Predictive Analytics for effective delivery of Police Services to citizens.

4. About 250 participants, including Young Superintendents of Police & Commandants from CAPFs, Senior Police Officers, other dignitaries, representatives of academia and industry participated in the event.

5. The following Moderators/Panelists/ Guest Speakers were invited to share their expertise and experiences during the Conference:

(a) Shri G.K. Pillai, IAS (Retd.), Former Union Home Secretary, GoI

(b) Shri Anish Dayal Singh, IPS, Addl. Director, Intelligence Bureau

(c) Shri Alok Sharma, IPS, IG, SPG

(d) Lt. General Sanjeev Madhok, PVSM, AVSM, VSM, Head of Defence Business, Dynamatic Technologies

(e) Shri Jayanto N. Choudhury, IPS (Retd.),

(f) Shri Radhakrishna B, Director – Risk & Fraud Management Practice, SAS India

(g) Smt. Harjinder Kaur Talwar, President, FICCI Ladies Organization (FLO)

(h) Shri Rahul Chowdhry, Chair, FICCI Homeland Security Committee

(i) Shri Himanshu Garg, IPS, SP, Yamuna Nagar & Former DCP / Traffic / Gurugram

(j) Shri Siddharth Kaushal, IPS, SP, Prakasham District, Andhra Pradesh

(k) Col. Haridas M. CEO & Co-Founder, DataVal Analytics

(l) Shri Praveen Jaiswal, Co-Founder & Director, Vehere Interactive

(m) Shri Rajiv Mehrotra, Chairman, Vihaan Network

(n) Shri Raghav Chaudhary, Head Business Development, South & South East Aisa, Motorola Solutions

(o) Smt. Amrapali Chavan, German Bakery Bomb Blast Survivor

(p) Smt. Kiran Dham, Managing Director & CEO, Globus Infocom.

6. The following topics were covered, in different sessions, during the two-day Conference:

Day 1

Inaugural Session

Session 1 - Big Data for Intelligence and Cyber Crime Prevention

Session 2 - Next Generation Technologies for SMART Police Cops

Session 3 - Best Practices in SMART Policing

Day 2

Session 4 - Internal Security: Key to Making India a $5-trillion Economy

Plenary Session



DAY 1 : MARCH 5, 2020

INAUGURAL SESSION: 1015 – 1135 HRS

Shri Manoj Yadava, Director General of Police, Haryana, in his welcome address talked extensively about the 'national security prowess' of the NSA. He said that Shri Ajit Doval is the last word and authority on the national security matters, and urged all the young SPs and Commandants to take inspiration from his achievements. Shri Doval is not only a theorist on national security but also a practitioner. The technology in policing can be a great asset when police personnel use it in an effective manner, he added.





Dr. Sangita Reddy, President, FICCI, in her special address, highlighted the importance of security in holistic economic growth. If security and development go hand-in-hand, there is less scope of negative consequences, she said. When internal security is minutely taken care of, the overall sentiment of protection is acknowledged. She opined that security is an essential driver in our economic growth, and violence is a huge burden on Indian economy. Technology can play a crucial role in building a safe and smooth ecosystem to bridge the gap between better policing and masses, she added.

She also added that the FICCI is working in the areas of security as it clearly helps in risk perception, risk management, risk mitigation, helping in growth and development of the country The FICCI is also working on bridging the gap between internal security technology, police modernization, border management, cyber-crime management and the issues related to procurement etc.





Shri VSK Kaumudi, IPS, DG, BPR&D, in his introductory speech welcomed the Chief Guest, Shri Ajit Doval, NSA, DGP Haryana, other dignitaries and all the participants. He acknowledged the dedication of the teams of BPR&D, Haryana Police and FICCI, who have worked tirelessly to organise the Conference and Police Expo to take forward the campaign of the Bureau to keep all police organizations abreast of the latest technologies for their effective functioning.

The DG, BPR&D, further mentioned that this Conference is not only a window for young police officers to cutting edge technology, it is also a platform for them to showcase their own innovations to achieve the goal for better policing. He informed that documenting the best practices is another important work of the Bureau. The BPR&D website hosts the Compendium of Best Practices in SMART Policing, brought out by the FICCI, apart from circulating its own compendium on the subject. The BPR&D is also starting training courses on advanced applications of space technology to ground level policing from its own premises. The work is in progress, in collaboration with NeGD and ADRIN.

The DG, BPRD, further mentioned that the FICCI's Homeland Security Committee can contribute to effective policing and open up new vistas for application of technology in policing and police related processes. He informed that in his cadre in Andhra Pradesh, a unique cashless mediclaim scheme "Aarogyabhadratha", was started, which is working well for the police force. The present President, FICCI, was an active partner in the scheme. He briefly mentioned the topics to be discussed in various sessions during the two-day Conference.





Shri Ajit Doval, KC, National Security Advisor (NSA), inaugurated the 'Young Superintendents of Police Conference and the 'Police Expo-2020'. Whilst delivering the keynote address, he expressed his concern about the fast changing security scenario and said, if these changes continued, the day is not far, when the challenges of the security will be manifold. But, definitely, people with high commitment, patriotism and professionalism are here to solve the problems, he added.

The NSA emphasized the use of technology in policing. He said, despite the high standards of education, good leadership, availability of manpower and resources, adequate technology is not available for policing. We need to equip the police personnel up to the beat constable level with the latest technology and gadgets for their day to day work. The induction of technology in policing should be need based instead of market based. At first, we should identify the problems, and then ask

our scientific organizations for a technological solution. He said that new innovations and technology induction in policing can bring about changes in the overall implementation and enforcement of laws in the country. Technology can help in policing in various ways, like, in controlling crowd, terrorism, looking after the national assets, border security, airport security, security of coastal areas and others, he added.

The NSA also stressed upon the use of Artificial Intelligence (AI) in policing and said that AI can use the huge data as a great resource for preparation and execution of future plans for preventing crimes.

The National Security Advisor said, people must have the right perception of the police and building trust between police and people is very important. The good work of police should be highlighted among the people, so that they become friendly towards the police. Technology can play a big role in changing the perception of people. He advised the young officers to enhance their skills, knowledge and competency for using technology and for inducting appropriate technology into policing. The young police officers should be tech-savvy in the changing security scenario for better policing.

The National Security Advisor released the "Compendium of Equipment," prepared by the BPR&D and the 2nd edition of the "Haryana Police Journal."









Shri Karuna Sagar, Director (Modernization), BPR&D, proposed the vote of thanks on conclusion of the Inaugural Session of the Conference.

SESSION 1: 1230 – 1330 HRS

Big Data for Intelligence and Cyber Crime Prevention

The session was chaired **by Shri Anish Dayal Singh, IPS, Additional Director, Intelligence Bureau.** He deliberated on the need and challenges of achieving the $5 trillion economy vision of the Hon'ble Prime Minister. He said it is very important to have a secure cyber security architecture and environment in our country. He stressed upon a secured cyber security structure and environment in the country and secured digital payments activities in the financial world to achieve the goal. Therefore, the need of the hour is to strengthen the cyber world and zero tolerance towards cyber-attack and building a robust cyber resilience framework. He also talked about developing a 'Cyber Suraksha Kawach' which will protect us from the cyber-attacks.

He suggested some of the points to be taken into consideration to meet these challenges as under:

- Strengthening the existing mechanism.
- Co-operation between public and private sector.
- Urgent need to improve cyber breach reporting.
- Need to harden out critical targets (including computer system etc.).
- Actual number of cyber-attacks to be registered in the police stations, as, only a few is registered now. This will provide accurate information.





Col. Haridas M, CEO & Co-Founder, DataVal Analytics, mentioned about the uniqueness of DataVal Analytics and its work in Big Data Analytics, IoT, AI & ML, Natural Language Processing and understanding, with a niche in providing consultancy services to defence and security forces. He further said that in the Cyber world, half of the war is won, if you know the intention of the enemy. For the police forces, the interest would be, as how to discover the unexpected pattern in the data, which one might lose with human eye but with the help of tools, it ensures that the patterns (Structured, Semi-structured and unstructured patterns) are not mixed, he said. With the help of Big Data Analytics, predictive analysis to be the one, which should come into the decision support system, he added.

He stressed on the use of Big Data and Open Source Intelligence by virtue of which, the police forces can enhance their investigative capabilities and the use of data science as force multiplier by the police forces. He stressed on predictive analysis of data. He further said that enhanced speed, accuracy, improved situational awareness and reliability of data are the need of the hour. He also highlighted the

use of data mining in combatting terrorism, a concept used by the Interpol against terrorists for searching their records by multistate anti-terrorism information exchange. The speaker concluded by referring to the book," Clean Disruption of Energy and Transportation," by Dr. Tony Seba, in which he describes, how disruptive technology is going to change our way of living in future.





Shri Radhakrishna B., Director - Risk & Fraud Management Practice, SAS, India, gave a presentation on the applications of Big Data Analytics in Crime Investigation. We are dealing with voluminous and huge variety of data coming from different sources, he said. In order to ease the task, he stressed upon creation of a data repository, which links different databases and organize these data in a structured manner using the principles of Person, Object and Location, associated with that event. Analyzing crime pattern and trend can be very critical in terms of certain crime types and concentration, he stated. This phenomenon helps in planning the deployment of resources within certain time slots. The speaker also talked about data record analysis and e-mail analysis. By virtue of all the available data, we need to create a mind map connecting all the dots and analyze them with the help of scientific tools in order to solve cases and prevent crime.





SESSION 2: 1430 – 1530 HRS

Next Generation Technologies for SMART Police Cops

Shri Jayanto N. Choudhury, IPS *(Retd.)*, Former DG, NSG, chaired the session. He said we are in the midst of the fourth industrial revolution and the Policing methods, the policing missions are changing very fast. This kind of Conference and Police Expo is very important to work out the actual requirement of technologies for the police forces. He deliberated on the combined use of soft and hard technologies for SMART Policing. At the same time, the concerns of privacy also need to be taken care of, he added. The applications of technological advancements are going to be very advantageous for the police forces. Now, the Govt. is taking many steps, like, setting up a Centre of Excellence at the IIT Bombay and similarly there is a proposal for developing Centre of Excellence in Police technology at the IIT Delhi. So everyone is aware that we need technology as force multiplier in policing but not the panacea.





Lt. Gen. Sanjeev Madhok (PVSM, AVSM, PVSM, AVSM, VSM & Head of Defence Business, Dynamatic Technologies) resumed the session. He said when we talk about technology, one thing that comes to our mind is – the smart policemen with smart technology. The combined effect of reforms and transformation can help in achieving this objective. We are the only country with different types of terrain & climate and that makes the job difficult for a policeman, he added. Coming to the advantages of drones, he said that drones can be a host for various issues like surveillance, crowd control, riot control, etc. However, they do undermine the privacy of an individual and that is where we need to be careful about. He also focused on the most important issue of "Time Efficiency," because it is important to take right decision on right time and at right place. He also talked about the Tethered Drones as an optimal Technology for law enforcement. He further stated that vehicle based big Tethered Drones are available in the world. Man Portable Tethered Drones are well designed to provide various facilities like- Surveillance- Sensitive location, BVR (Beyond Visible Range) observation, Police activities (crowd control, Riot Management, Traffic Management, Route Sanitization, ISR, Operations Major Events), part of disaster Management & Control and Aerial Mesh capability. The various risks that these drones accompany are spying & tracking, surveillance and anti-surveillance, breach of privacy, physical attack, data leakage, controlling spoofing. He also added that National & Local Drone Regulations which are coming about creation of No Drone Zone will be the activities that the police will implement in the future.





Shri Rajiv Mehrotra, Chairman, Vihaan Networks, said that his company VNL, took up the challenge of designing the mobile system in India and now it is India's first and the only company to design and manufacture own portfolio of Global System for Mobile (GSM), Long Term Evolution (LTE), Broadband Networks. He further added, in today's world the only thing that matters is technology and its access at affordable price. He further informed that VNL has one of the largest project Green Mobility Network taken up in 2016, which is 100% solar powered mobile network established in 22688 villages in 90 Districts and 10 States. This is the first major milestone under Digital India. He further informed that other technologies which provide, next level to our defence body are- Tactical Instant Communication solution, 2G,3G,4G Cellular Mobile Geo Locator, Emergency SMS Massaging System application like Crowd Control, emergency communication, Mini Area SIGINT System, Secure Communication Network, Tactical SDR Family, ResQMobil For Disaster Management, 6 Layers of integrated Perimeter Intrusion Detection System, Unattended Ground Sensor, Advanced Wiring Snap Camera, Quadcopter Based Sigint EO system and Intelligent Jammer.





Shri Raghav Chaudhari, Head Business Development, Motorola solutions, said that the firm is dedicated in designing and delivering the technologies that keep business and public safety customers safe and productive – the life line they count on. He talked about the lack of communication among the different agencies not only in India but elsewhere as they are using different technology platforms. Hence there is a need for the intelligence to integrate ICT platforms. The Firm has been looking in the area of safe cities, particularly, the mode of unification of communication, to enable movement of data,

with the help of AI solution to give better decision and outcome, he said. He also talked about installing the cameras for surveillance along with a layer of analytics so that an actionable output in the existing command controlling platform is obtained. He also spoke about, analytics solutions in terms of camera platform for perimeter security, body borne cameras for facial search, video search, a platform called 'wave' which bridges the gap between the radio and broadband etc. He elaborated on the designs of land mobile radio, Public Safety LTE, Command Centre Software, Video Security and Analytics, Maintenance and support services. He concluded on a note - Integrated Command and Control platform is a need of the hour and safe city is a smart city, just not about hanging cameras across the cities but to deploying ways and means to convert the data into actionable intelligence.









SESSION 3: 1530-1700 HRS

Best Practices in SMART Policing

Shri G.K. Pillai, Former Union Home Secretary, chaired this session. He opened the session by presenting a book i.e. 'The Future is Faster than You Think' written by Mr. Peter Diamand is and Mr. Steven Kotler. He recommended the book for young SPs and said this book gives an idea, how the things are going to evolve in future, how technology is changing the business, industry and our lives. The author has provided a deep and thorough researched view of the road ahead. He also deliberated the revolution in the way of travel due to Ola, Ubar etc. He further talked about the development of virtual avatars, where physical travel will not be required but the hologram, language / talk etc. of the person will be there where he wants to travel.

He also mentioned about the various Police projects and new best practices like Cyber forensic labs at Bangalore, UP 100 Dial Projects, Mahila Suraksha in Pune, Punjab have artificial intelligence system for detecting crime in anticipation of incidents itself, Pune senior citizen cell, human trafficking, Okhla Smart City Police Station etc., implemented in various States.





Shri Alok Sharma, IPS, IG, SPG, speaking on the management of Kumbh Mela explained, how innovative methods helped to manage the crowd at Prayagraj Kumbh mela in real exact manner, highlighted the role of Artificial intelligence in managing crowd at a festive location like Kumbh Mela. He emphasized to create an ecosystem to tackle crowd with ease and responsibility. There must be stagger in space and time. Use of technology and the latest gadgets can help the officers to discharge their duties with great competence. He highlighted the following points:

- There should be a system of documenting the post event analysis to keep record of such events.
- The basics of crowd control is, stagger the time and space. Use the latest technology, artificial intelligence for the time and crowd control. Nobody can challenge the technology.
- The Crowd behaviour is something which is unpredictable and is not data based.
- Should always be free from pressure while controlling the crowd.
- The crowd is not controlled from the epicentre. When there is crowd at epicentre, then, control the crowd from periphery, the crowd at the epicentre will be controlled automatically.

- Crowd is leaderless so, lead the crowd.
- Leading the crowd with confidence is the most important thing.
- To control the crowd, you have to make practical plan, do training, and prepare the team ready to deliver.
- Human perception is most important thing for crowd control, keep the crowd moving, when you stop the crowd moving, there will be disorder and many people can die and get injured.





Shri Himanshu Garg, IPS, SP, Yamuna Nagar & Former DCP/Traffic, Gurugram talked about the initiatives in Road Safety & Traffic Management to make traffic in Gurugram more effective and citizen friendly. He explained the vehicle towing management system and various challenges faced during manual towing in Gurugram City as under:

- Complaints of staff releasing vehicle in exchange for illegal gratification.
- Vehicle owners didn't know where their vehicle has been taken to.
- Vehicles were released on the phone calls of influential persons without paying any penalty.
- There was no way to check whether towing is taking place from assigned areas or not.
- Delayed payments to the towing contractor

The speaker further mentioned that with the help of Centralized Vehicle Towing Management System, following steps were taken to mitigate the challenges:

- A constable is attached to every towing crane.
- Towing is done through a Geo enabled Mobile App.
- Before towing, a photograph of the vehicle to be towed is taken and uploaded on the App.
- The towed vehicle is parked at pre-designated parking places.
- The towed vehicle is reflected on the Central Dashboard which is operated from Traffic Control Room.
- Citizens can call 1095 to enquire about the location from where they can pick their towed vehicle.
- Daily towing report is generated by Traffic control room to ascertain the work done by each towing crane.

The speaker also stated how the Google Maps help to map and identify stretches and lanes jammed or over crowded. He said that a detailed analysis is done after mapping all the data and efforts are made to work out all possible reasons behind the traffic jam and to introduce appropriate solution to address the issue.





Shri Siddharth Kaushal, Superintendent of Police, Prakasam District, Andhra Pradesh, gave an engaging and inspiring presentation on the initiatives: SPANDANA & PARIVARTAN, implemented in Andhra Pradesh. SPANDANA is re-inventing citizen services, PARIVARTAN is re-engineering internal processes. The SPANDANA Project has made citizens feel good & also saved a lot of money. The Project is the solution for citizens to get prompt response at Police Station level.

He said, for Re-engineering Public Grievance Redressal (PGR) in Prakasham Distt, the Police allowed digital access instead of physical access, decentralized-distributed process design instead of a centralized process design and a live Video Conference (VC) system was started that allowed instant access between terminals dispersed across the district. For Physical Accessibility, all Police Stations were connected; doors were opened to the public to freely walk into any police station and connect directly with the SP and get a definite resolution of any issue within 15 days, he said.

He added, at the police station, out of the total citizens seeking police services, less than 20% were women. In SPANDANA almost 50% are women. Out of the citizens who come, 60% come directly to SP without visiting the police station first. The large section of the population, mainly, poor, SC/STs, etc. who find difficulty in having access to the police, have benefitted.

He further said that for global accessibility, people from anywhere in the world can come to participate in SPANDANA and avail the services using only a mobile app. The people from countryside like Delhi, Bangalore and abroad like US, UK, Dubai connect to SPANDANA for help in Prakasam, Andhra Pradesh.

He mentioned that to get accountability, the entire program is conducted over live video link. The entire process is automatically video-recorded for fool proof documentation. Every petition is entered online into CCTNS, tracked & monitored and time-bound disposal is mandatory. The citizens are given a paper as well as an electronic receipt. The Monitoring Cell collects individual feedback from every petitioner in detail, he added.

He also explained the second project i.e. PARIVARTAN, which is about re-engineering the internal processes, that includes two Critical Processes – Performance Review & Training. The Performance review in Police is traditionally done through a system of Monthly Crime Review (MCR) meetings. The training to Police on knowledge-based skills is given through a system of classroom-based instructions. He stated that in the existing process, design is inconvenient, disruptive, expensive and has many problems with Monthly Crime Review meetings.

He further added that with the new system - physical to digital has changed the system of Monthly Crime Meeting at HQ to a system of Weekly Performance Review over VC. Police Officers can connect from multiple locations and from each location many officers are able to connect. Now over 400 police personnel including HCs / ASIs can participate. It saved fuel, man-hours, exhaustion etc., minimized disruption in routine work and officers are available in their jurisdiction for any emergency response. All the proceedings are automatically saved as permanent video record, he added.

He mentioned that the classroom based training disrupts routine work and weakens emergency response, challenges in getting Instructor/Expert and only a roomful of people could attend the lecture at a time. So, the project i.e. PARIVARTAN is a solution by going digital through live VC system that helped to sort out the above problems.

To sort out the above problems, the system of physical classroom-based instruction to a system of virtual classrooms has been initiated. Earlier, one trainer could teach only a roomful of trainees; now, 300-400 trainees can attend online lectures, simultaneously. Now, for a force of 3500, 10 training cycles are enough, in place of 100 cycles earlier. All the proceedings /video are recorded and the dissemination is potentially limitless. The training is conducted on-site, disruption is minimized and availability of officers for emergency response has increased.











DAY 2 : MARCH 6, 2020

SESSION 4: 1000 – 1115 HRS

Internal Security: Key to Making India a $5-trillion Economy

Shri Rahul Chaudhry, Chair, FICCI Homeland Security Committee, chaired this session and he said that economic development and security are absolutely related issues because poor security system is detrimental for the economic growth of any country. He opined upon why, the vision of $5 trillion economy is so important. He described the disparity in per capita income among different states in India. This disparity hampers the social cohesion. He explained the need of social cohesion for economic development through the example of Noida and Gurugram. He, therefore, stated that it is very important to look after the avenues to drive this vision of economic growth. Shri Chaudhry invited the panellists from different walks of life to share their view points on why internal security is important for achieving a $5 trillion economy. With 130 crore people, India is an attractive investment destination for the global market. Hence, internal security becomes an important factor for the growing economy.





Smt. Harjinder Kaur Talwar, President, FICCI, FLO, mentioned that the FICCI, FLO stands for FICCI Ladies Organization (FLO) i.e. the Women Chamber of the country with one of the mottos to accomplish the vision of Hon'ble Prime Minister to achieve $5 trillion economy. FLO is the dominant voice of women in India for policy change. Smt. Talwar showcased the findings of a study by Bain & Company, a global management consulting firm; the contribution of working women in India is only 17% of the GDP compared to the world's contribution of 37%, which is slightly more than double. She suggested all to retrospect and jot down the mistakes of the past and try to rectify them in order to boost this figure. In India, only 26% of women are working while the figure remains 48% for rest of the world. Right education, appropriate technologies, secure environment and equal opportunities can enhance the participation of women in workforce, she emphasized.





Smt. Amrapali Chavan, German Bakery Bomb Blast Survivor, briefed on the role played by common man in contributing to the economy of the country despite all the struggle and challenges faced by him. She shared her journey from a survivor to a fighter. She narrated to the audience as to how, the German Bakery Blast of February 13, 2010, in Pune, changed her perception towards life. In spite of all the miseries that she came across, there was some incredible power from within that let her go and move forward with her life. In spite of losing her memory, hearing and speaking ability, she fought with the circumstances which she had been into and that was the first time when she decided to devote her entire life to social service, if she survived.

She further deliberated that nothing but an extraordinary and innovative idea is required to boost the economy from a single penny to millions and trillions. With respect to this, she talked about 'Peace Organization' which she has been a part of. She requested all the participants to fight against the negativities prevailing in the society, because, that is what we need to accelerate optimistic approach towards the welfare of the nation. This will eventually help in boosting our economy.





Smt. Kiran Dham, Managing Director & CEO, Globus Infocom, said that education is the most important component in building up the economy and security is the need of the hour. Answering to why security is very important, she elaborated that security has become a necessity because of multiple reasons. She added, the increasing crime rate, fraudulent activities and the prevalence of terrorism are posing threat to the security. Smt. Dham opined that the security industry needs to grow prolifically in order to achieve the $5 trillion economy goal. It is a vast and emerging industry providing employment opportunities

to the youth. This will play a major role in eradicating unemployment in India. Smt. Dham concluded that all the users, stakeholders, employees and service providers should work together as a community and try to make India secure and contribute in achieving the vision of $5 trillion economy.









PLENARY SESSION: 1115 – 1230 HRS

Shri Manoj Yadava, IPS, DGP, Haryana, in his welcome speech thanked the Hon'ble Chief Minister of Haryana, Shri Manohar Lal for his kind presence. Quoting certain achievements of the Haryana Police, he said that crime against women has gone down in Haryana. The Haryana Police have saved many lives as well as the human capital of the state by preventing many road related accidents and casualties, he added.





Shri Karuna Sagar, IPS, Director (Modernization), BPR&D, presented an overview of the two-day Conference and Police Expo-2020. He said the Young SPs Conference was introduced during the year, 2017, as per the directives of the Hon'ble Prime Minister in the DGsP/IGsP Conference – 2015 that the young police officers should be trained and made familiar with the latest technologies.

He further said that the BPR&D in association with Haryana Police and FICCI has organized the 3rd Young Superintendents of Police Conference 2020 and 2nd Police Expo. The Theme of this Conference is "New age Solutions for Effective and Efficient Policing".

The Conference and the Expo was inaugurated by Shri Ajit Doval, KC, National Security Adviser. During the inauguration speech, the NSA stressed upon:

- The crucial role of the Young Officers in enforcing the laws enacted by the elected lawmakers, and the need for stepped up use of technology
- The change of approach to induct and integrate technology into Police Forces
- Use of latest technology such as Artificial Intelligence, Machine Learning and advanced algorithms to evolve solutions to Modern Policing

Shri Karuna Sagar further gave brief about the topics deliberated upon in the four sessions during this Conference.





Shri Rahul Chaudhry, Chair, FICCI, Homeland Security Committee, highlighted the role played by FICCI in terms of bridging the gap between technology and Policing. He also mentioned about that the FICCI SMART Policing Awards, which recognized the best practices in SMART Policing. He said that security integration with national development is the most important dimension. If a nation doesn't provide security to the business, the economic development is hampered.





Shri V.S.K. Kaumudi, IPS, Director General, BPR&D, hailed the Hon'ble Chief Minister of Haryana, Shri Manohar Lal, for gracing the event by his presence. He also expressed his gratitude to the DGP, Haryana, President, FICCI, dignitaries and young SPs and Commandants present from different parts of the country.

The DG, BPR&D, informed that this is an important initiative taken by the BPR&D to organize this type of Conference and Police Expo to apprise the young officers of Law Enforcement Agencies about the latest technologies / products. He further informed that more than 200 Young SPs and Commandants and other law enforcing officers from different parts of the country have participated in this Conference. More than 130 firms / industries have exhibited different technologies / equipment in this Police Expo. The BPR&D provides a platform to showcase the latest technologies and best practices of different stakeholders to all the LEAs across the country, he added.

He further informed that the BPR&D has also released the latest edition of the Compendium of Equipment, covering period from 2014 to 2019. This Compendium, provides complete information about various types of equipment procured and being used by all the LEAs in the country.

The DG, BPR&D, informed that the Expert Screening Committee constituted under the BPR&D will prepare a Report of all the equipment showcased in this Expo and give recommendations about usefulness of the equipment for the LEAs. This will help the LEAs to identify appropriate technologies for effective policing.





Shri Manohar Lal, Hon'ble Chief Minister of Haryana, complimented the BPR&D, the Haryana Police and the FICCI for organising the National Level Conference and Police Expo at Gurugram. The Hon'ble Chief Guest talked about the important role of police in implementing the Laws and maintenance of public order. He emphasised the need of various steps, like, community mobilisation, police public partnership and people friendly police. He also reminded about the vision of the Hon'ble Prime Minister about SMART Cities and SMART Policing. He explained the aspects of sensitivity, alertness, responsibility, training and transparency in the police system for ensuring effective policing.

The Hon'ble Chief Guest also talked about the need for technology in policing. He said that ease of doing business, conducive business environment and better law and order situation in the country are prerequisites for the industry to prosper. It will encourage the nation to achieve the goal of 5 trillion dollar economy.





The Conference and the Police Expo concluded with a Vote of Thanks by **Shri Muhammad Akil, Police Commissioner, Gurugram.**






POLICE EXPO 2020
3rd YOUNG
Superintendents of Police
Conference 2020

GLIMPSES

GLIMPSES OF THE EXPOSITION– 2020





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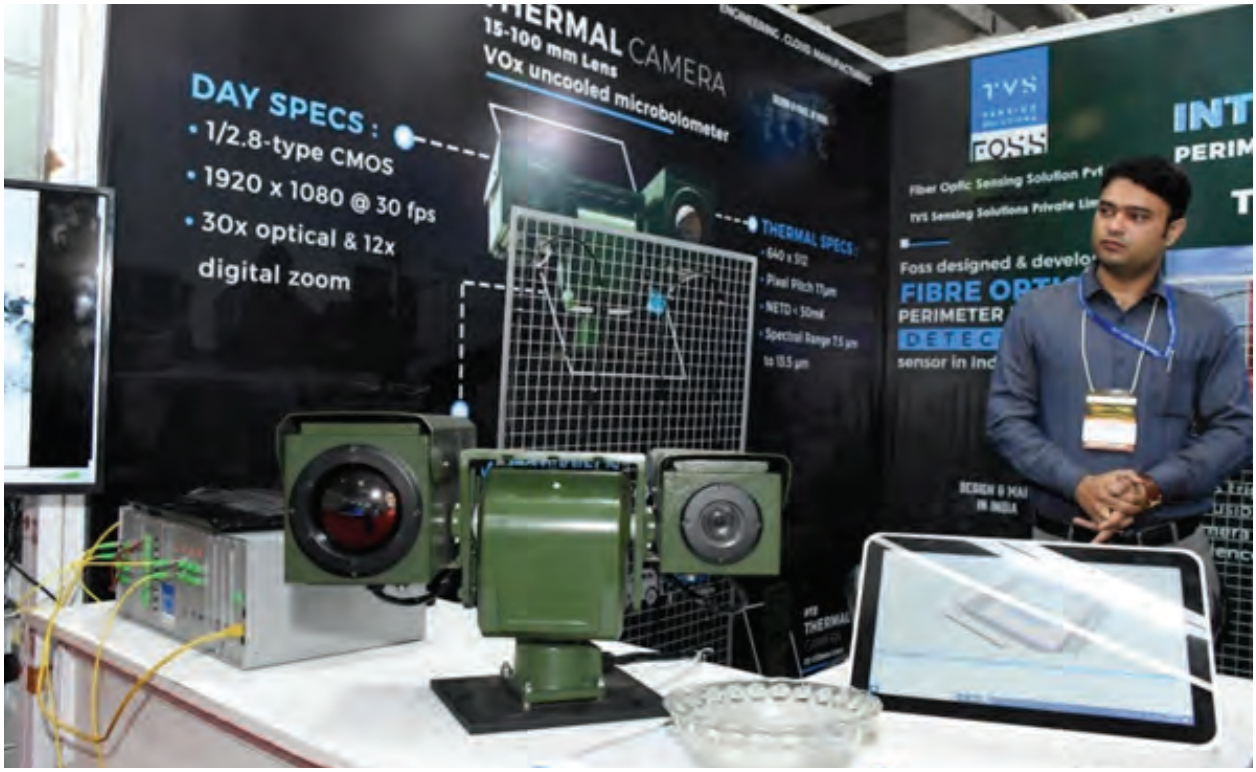


GLIMPSES OF THE EXPOSITION– 2020





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IMPORTANT PHOTOS





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EXPERT SCREENING COMMITTEE REPORT

1. INTRODUCTION

The Young SPs & Commandants Conference traces its origin to a resolution of the DsGP/ IsGP Conference - 2015, which suggested that young officers need to train junior colleagues on the latest technologies, techniques in investigation, trends in crime etc. Accordingly, the Bureau of Police Research & Development organized the First National Conference for Young Superintendents' of Police and Commandants from CAPFs on **'Technological Empowerment for Impactful Policing'** on August 1 - 2, 2017 at the Vigyan Bhawan. The Conference was attended by Young Superintendents of Police (State /UTs) with 5-10 years of service experience and Commandants of CAPFs.

In the series of same endeavour, the Bureau organized the Second National Conference for Young Superintendents of Police clubbed with **Police Expo** in association with the FICCI on **July 26-27, 2018at the BPR&D Hqr. Mahipalpur, New Delhi.** The theme of the Conference was **'Predictive Policing and Contemporary Challenges for Indian Police Forces'** with exposition focus on areas such Artificial Intelligence, Predictive Policing/ Crime Analytics/Big Data Analytics, Geospatial Technologies, Cyber Crime, Surveillance Tracking & UAVs and CCTV Equipment.

The Bureau organized the next edition of the National Conference for Young Superintendents of Police clubbed with **Police Expo** in association with the Haryana Police on **March 5 -6, 2020 at Apparel House, Gurugram.** The theme of this Conference was **'New Age Solutions for Effective & Efficient Policing'** and the exposition focused on areas such as Body Armour, Mine Protection Vehicle (MPV), Less than Lethal Weapons, Advance Weaponry, Latest Communication Equipment, Surveillance Equipment, Drone & Anti-Drone Technologies, Cyber Security/ Cyber Crime Management and Big Data & Predictive Analytics.

During the Conference and Police Expo - 2020, the Bureau had also constituted an **Expert Screening Committee** for evaluating the products and technologies of the exhibiting companies.

2. EXPERT SCREENING COMMITTEE (ESC)

The Screening Committee was chaired by Shri Karuna Sagar, IG/Director (Modernisation), BPR&D. The following senior officers were expert members of the Screening Committee:

a. Shri Abhishek Trivedi, IG (Prov), NSG

b. Shri Ajay Kumar Yadav, IG (Prov), CRPF

c. Shri B.K. Mehta, IG (Comn & IT), BSF,

d. Shri S.S. Chaturvedi, IG, SSB

e. Shri Sandeep Khirwar, IGP/Rohtak Range, Haryana Police

f. Shri N. G. Gupta, IG (DAE & DOS), CISF

g. Shri H.P. Agarwal, Director, Directorate of Low Intensity Conflicts (DLIC), DRDO

h. Shri Anyesh Roy, DCP/Cyber Crime, Delhi Police

i. Prof. Naresh Bhatnagar, Department of Mechanical Engineering, IIT Delhi

j. Shri S. Anantha Ramakrishna, Department of Physics, IIT Kanpur

k. Dr. Novaline Jacob, Scientist/Engineer 'G', and Director/ Head, DKD, ADRIN

l. Shri Sumeet Gupta, Assistant Secretary General, FICCI, Homeland Security

3. TERMS OF REFERENCE FOR THE ESC

a. Visit all the Booths/ Stalls of exhibiting companies and evaluate technologies relevant for policing under varied conditions.

b. Facilitate B2G meetings between Industry/ Solution Providers and user organisations (CAPFs & State Police Forces) to undertake field trials and pilot projects for better customisation and adoption.

c. Prepare review report of the products/ technologies / solutions, which could be uploaded on the website of the BPR&D.

4. METHODOLOGY FOLLOWED BY THE ESC

The 1st meeting of the ESC was held on February 28, 2020, at the BPR&D Hqrs.. It was decided that the ESC would evaluate the products / technologies / gadgets to be showcased by the exhibiting companies. For the evaluation purpose, if need be, the demonstration of the products / technologies / gadgets would also be organized. Evaluation would be focused on the functioning of police under varied conditions and for each product / technology / gadget the following recommendations would be made by the ESC:

a) Eligible for procurement immediately

b) Pilot Project

c) Field Trial

d) Needs modification or further development

e) Does not meet the requirement

The ESC has also suggested that during the evaluation, representative from State Police and CAPFs may also be co-opted.

The Committee has also clarified the following terms for better understanding of various aspects at later stage:

a) Eligible for procurement immediately: The committee would suggest this recommendation, when it is found that the evaluated products / technologies / gadgets are matured enough for acquisition immediately. However, if any State / CAPF / CPO intend to acquire such product / technology / gadget, the user organizations may go for field trial at their end to understand the functioning and operational aspects of the equipment. The final decision for further acquisition would be of the user organization.

b) Pilot Project: A small scale preliminary study to be conducted in order to evaluate feasibility, extent of suitability & utility, readiness and financial implications prior to a full-scale acquisition. The products / Technologies / Gadgets recommended may be chosen for pilot project and the final decision for further customization or acquisition would be of the user organization.

c) Field Trials: Field trial is a test of the performance of a product to determine its efficiency or usefulness in actual functional / operational conditions. The Products / Technologies / Gadgets recommended for field trial may be chosen by any State / CAPF / CPO for conducting field trial. The final decision for further customization or acquisition would be of the user organization.

d) Need modification or further development: The committee would suggest this recommendation when it is found that the evaluated products / technologies / gadgets are not suitable

in the present form but after certain modifications / customizations same would be of utility for law Enforcement Agencies.

e) **Does not meet the requirement:** The committee would suggest this recommendation when it is found that any Product / Technology / Gadget is not suitable in the backdrop of its utility/functional requirement of law Enforcement Agencies.

The 2nd Meeting of ESC was held on March 5, 2020, at the Venue of the Police Expo – 2020. As wide range of products had been showcased by the exhibiting companies in the Police Expo, the Expert Committee decided to form three groups as under:

Groups	Group A	Group B	Group C
Category of Products/ Technologies/Gadgets to be evaluated by the Groups	Big Data & Predictive Analytics, Cyber Security/ Cyber Crime Management & Others	Communication Equipment including Satellite Telephone, Drone & Anti-Drone Technologies	Advanced Weaponry, Body Armor, Less Than Lethal Technologies, Mine Protection Vehicles (MPV) & Surveillance Equipment-Day & Night
Committee Members	**Sh. Sandeep Khirwar,** IPS, IGP, Haryana Police. **Sh. Anyesh Kumar,** DCP, Delhi Police. **Dr. Novaline Jacob,** Scientist/Engineer 'G' , and Director/ Head, DKD, ADRIN. **Sh. Sumeet Gupta,** ASG, FICCI	**Dr. S. Anantha Ramakrishna** Professor, Department of Physics, IIT Kanpur. **Sh. B. K. Mehta,** IG (Comn & IT), BSF. **Sh. N.G. Gupta,** IG, DAE & DOS Hqrs. New Delhi, CISF **Shri HP Agarwal,** Director, Sc 'G', Dte of LIC, DRDO Reps from **Assam Rifles**	**Sh. Abhishek Trivedi,** IG (Prov.), NSG and **Maj. Rahul Srivastav,** NSG. **Sh. Ajay Kumar Yadav,** IPS IG (Prov), CRPF. **Sh. S.S. Chaturvedi,** IPS, IG, SSB. **Prof. Naresh Bhatnagar,** Department of Mechanical Engineering IIT Delhi Reps. from **ITBP**

5. SUMMARY

The ESC evaluated 154 different products/ technologies. *Fig 1 described the number of products reviewed under each category.* The maximum number of the products displayed were in the category 'Others,' that included products such as virtual classroom solutions, portable X ray machine, metal detectors. This was followed by 'Drone & Anti-Drone Technologies' with about 32 products. The least number of products displayed were in the category 'Mine Protection Vehicle' with only 3 products displayed.

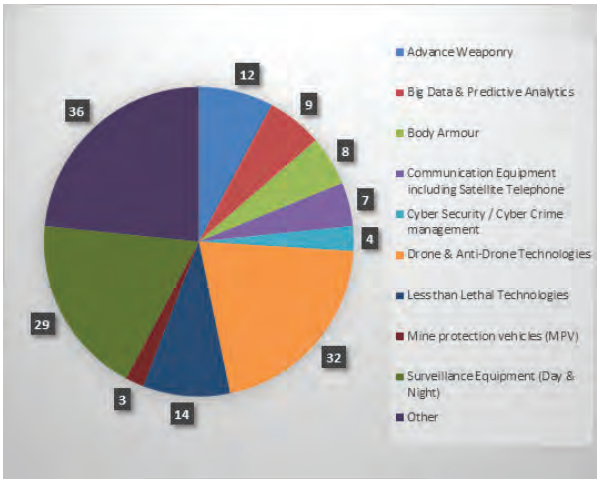


Fig 1: No. of products reviewed in each category

The ESC has suggested/recommended 'Field trials' for about 101 out of 154 evaluated products. *Table 1 and Fig 2* depict the category wise summary of actions recommended by the ESC. About 10 products from the category *'Surveillance Equipment (Day & Night)' and 'Others' category* were recommended 'Eligible for procurement immediately. 4 products from the categories *'Communication Equipment including Satellite Telephone', 'Drone & Anti-Drone Technologies' and 'Others'* were suggested as 'Does not meet the requirement' The details of organization, contact person and recommendations of ESC against each item are given in ***Annexure I.***

Sr. No.	Category	Suggested recommendations of ESC				
		Eligible for procurement immediately	Pilot Project	Field Trial	Need modification / Further product development	Does not meet the requirement
1	Advance Weaponry	0	0	11	1	0
2	Big Data & Predictive Analytics	0	6	3	0	0
3	Body Armour	0	0	8	0	0
4	Communication Equipment including Satellite Telephone	0	3	3	0	1
5	Cyber Security / Cyber Crime	0	0	4	0	0
6	Drone & Anti-Drone Technologies	0	1	26	4	1
7	Less than Lethal Technologies	0	0	14	0	0
8	Mine protection vehicles (MPV)	0	0	2	1	0
9	Surveillance Equipment	2	2	23	2	0
10	Other	8	15	7	4	2
Total Products under each ESC recommendation		10	27	101	12	4

Table 1: No. of products reviewed in each category

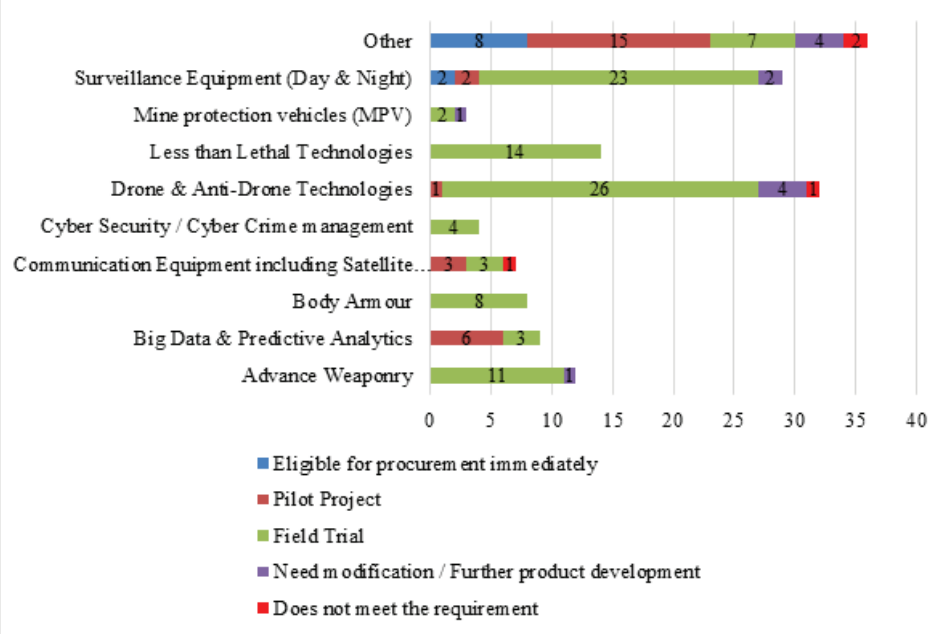


Fig 2: Category wise summary of actions recommended by ESC

The *Table 2 and Fig 3* depict the product maturity wise summary of products. The details of the product maturity stage/ technology readiness level are in **Annexure II.** 108 products were in the TRL 7+, followed by 37 products in TRL 6.Further, about 7 products were in TRL level 1-3, these products were from the category *'Drone & Anti-Drone Technologies' and 'Other'.*

Sr. No.	Category	Product Maturity		
		TRL 7+	TRL 4-6	TRL 1-3
1	Advance Weaponry	12	0	0
2	Big Data & Predictive Analytics	1	8	0
3	Body Armour	8	0	0
4	Communication Equipment including Satellite Telephone	7	0	0
5	Cyber Security / Cyber Crime	0	4	0
6	Drone & Anti-Drone Technologies	23	7	2
7	Less than Lethal Technologies	14	0	0
8	Mine protection vehicles (MPV)	2	1	0
9	Surveillance Equipment (Day & Night)	25	4	0
10	Other	16	15	5
Total Products under each ESC recommendation		108	39	7

Table2: No. of products reviewed in each product maturity stage

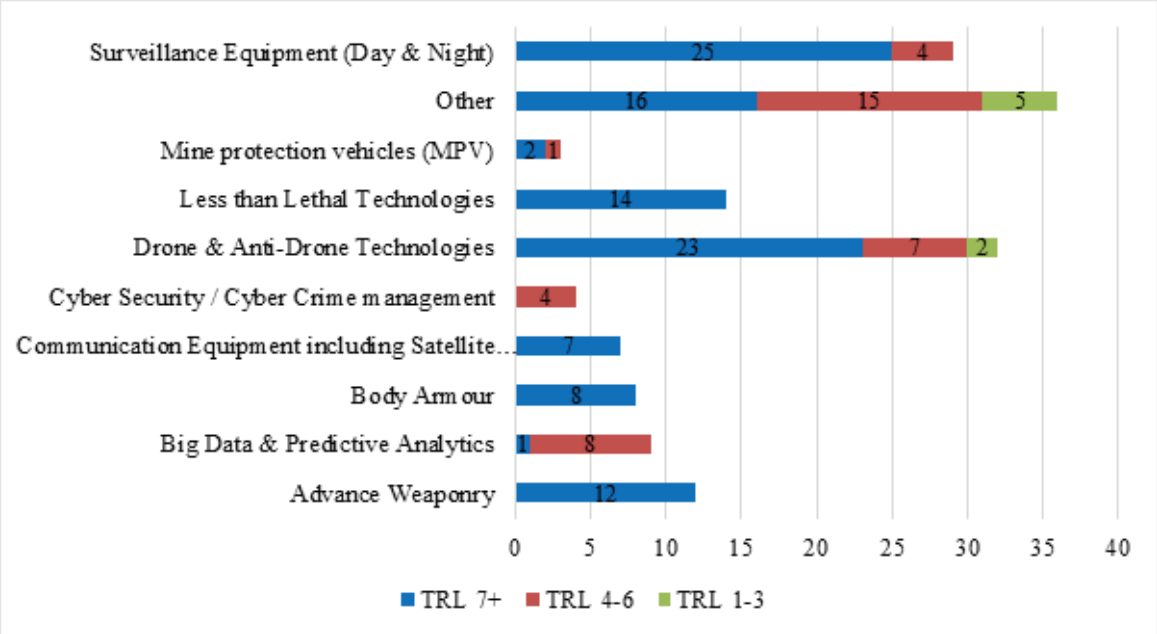


Fig 3: Category wise product maturity stage

6. CATEGORY WISE EVALUATION & RECOMMENDATION

a. Advanced Weaponry

12 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** The summarised details of the products are represented below in Fig 3 below:

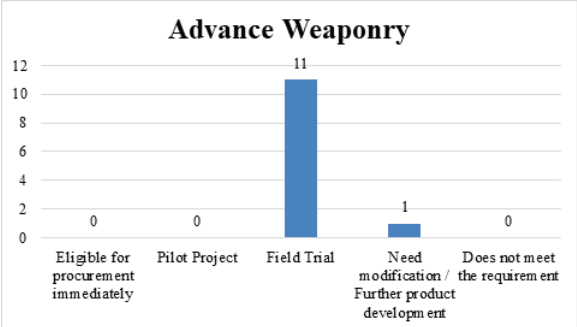


Fig 4: Recommendations for products in the category 'Advance Weaponry'

b. Big Data & Predictive Analytics

9 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** Most of the products in this category were with product maturity level TRL 4-6. The summarised details of recommendations are represented below in Fig 5.

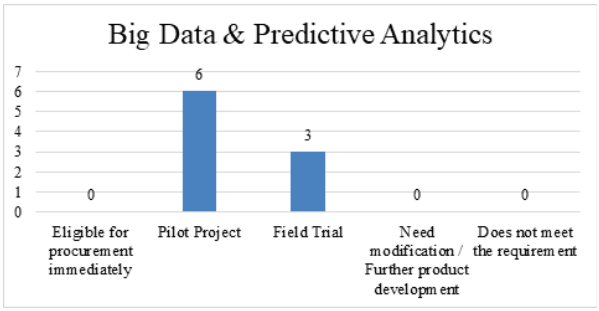


Fig 5: Recommendations for products in the category 'Big Data & Predictive Analytics'

c. Body Armour

8 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure – I**. All the products were in maturity stage TRL 7+. The summarised details of recommendations are represented below in Fig 6.

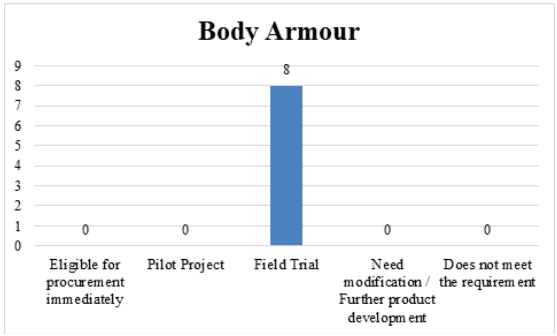


Fig 6: Recommendations for products in the category 'Body Armour'

d. Communication Equipment including Satellite Telephone

7 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** The summarised details of recommendations are represented below in Fig 7.

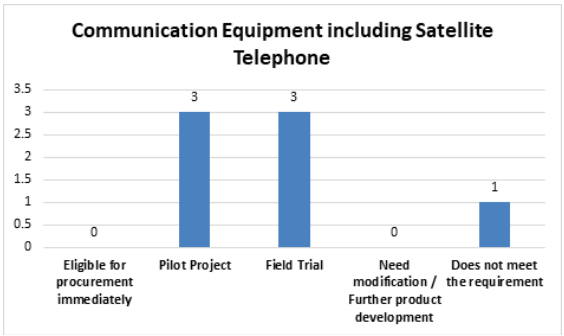


Fig 7: Recommendations for products in the category 'Communication Equipment including Satellite Telephone

e. Cyber Security / Cyber Crime management

4 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.**

All the products were in Product maturity stage TRL 4-6. The summarised details of recommendations are represented below in Fig 8.

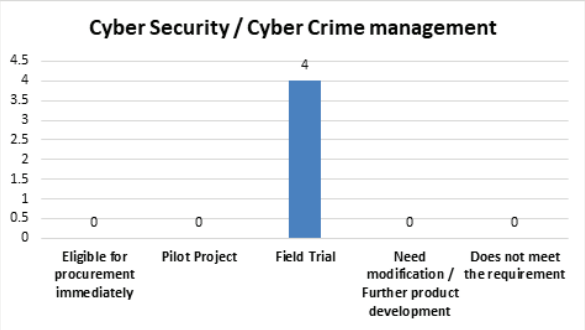


Fig 8: Recommendations for products in the category 'Cyber Security / Cyber Crime management'

f. Drone & Anti-Drone Technologies

32 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure-I.** Out of total products in the category, 23 products were with product maturity level TRL 7+. The summarised details of recommendations are shown below in Fig 9.

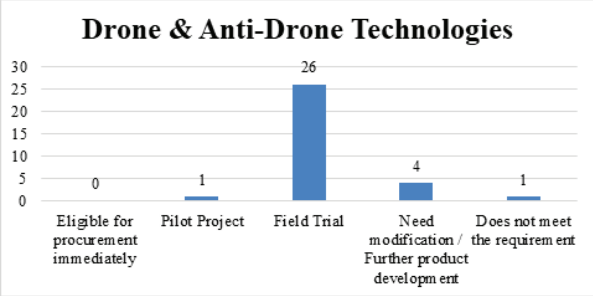


Fig 9: Recommendations for products in the category 'Drone & Anti-Drone Technologies'

g. Less than Lethal Technologies

14 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** All the products were in Product maturity stage TRL 7+. The summarised details of recommendations are represented below in Fig 10.

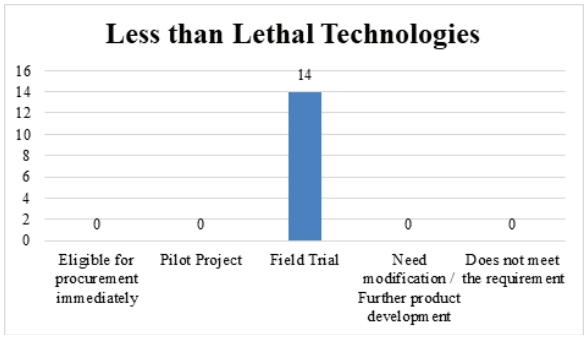


Fig 10: Recommendations for products in the category 'Less than Lethal Technologies'

h. Mine protection vehicles (MPV)

3 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** 2 products with product maturity level TRL 7+ were recommended for Field Trial by ESC. The summarised details of recommendations are shown below in Fig 11.

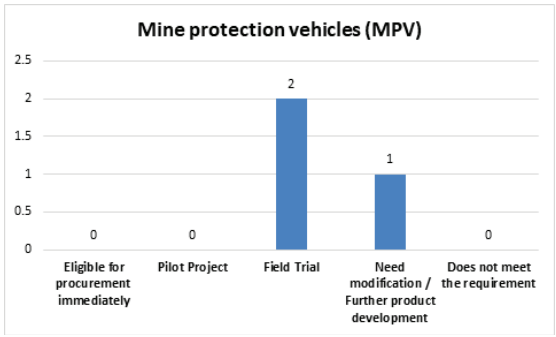


Fig 11: Recommendations for products in the category 'Mine protection vehicles (MPV)'

i. Surveillance Equipment (Day & Night)

29 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I.** Most products in this category were with product maturity level TRL 7+. The summarised details of recommendations are represented below in Fig 12.

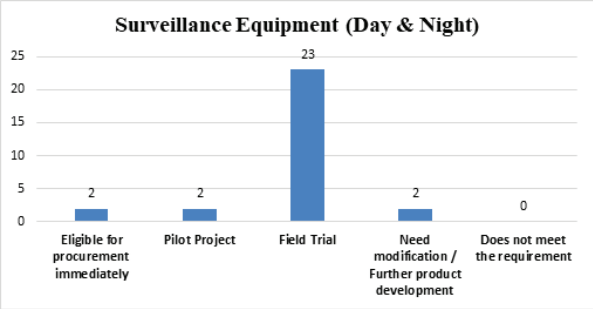


Fig 12: Recommendations for products in the category 'Mine protection vehicles (MPV)'

j. Others

36 different products / technologies were evaluated by the ESC, details of firms, contact person and recommendations of ESC against each product are given in the **Annexure - I**. About 44% of the total products in this category were with product maturity level TRL 7+, followed by 42% of the total products in this category were with product maturity level TRL 4-6. About 50% of the products with product maturity level TRL 7+ were recommended as ***eligible for procurement immediately*** by the ESC. The summarised details of recommendations are represented in Fig 13.

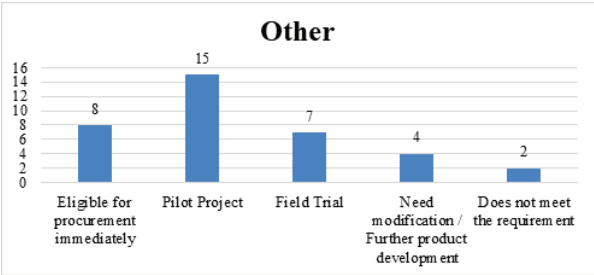


Fig 13: Recommendations for products in the category 'Other'

Disclaimer

The Police Expo – 2020 was organized by the Haryana Police & Federation of Indian Chambers of Commerce & Industry (FICCI) clubbed with the Young Superintendents of Police Conference organized by the BPR&D. The Police Expo aimed to create awareness among Young Superintendents of Police from States and Commandants from CAPFs, regarding latest technologies in areas such as Advance Weaponry, Big Data & Predictive Analytics, Body Armour, Communication Equipment including Satellite Telephone, Cyber Security / Cyber Crime management, Drone & Anti-Drone Technologies, Less than Lethal Technologies, Mine protection vehicles (MPV), Surveillance Equipment (Day & Night) and Other equipment for effective delivery of Police Services to citizens. The Expert Screening Committee (ESC) and the BPR&D would not certify or endorse any product/technology/gadget exhibited during the Police Expo and evaluated by the ESC. This Report and any recommendation of Expert Screening Committee should not be claimed for any approval of products/technologies/ gadgets etc. by the firm in future.

The Recommendations of this report are merely the suggestions for Law Enforcement Agencies as a ready reference and not for usage for any other purpose or for any legal issues involved.


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ANNEXURE I

Advanced Weaponry

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommend-ation by ESC	Remarks by ESC
1	Weapon (Ak-47) Modification Kits	Star Aerospace Industries	Mr. Jagmohan Singh +91 9756600839 jagmohan.singh@staerospacepltd.com	TRL 7+	Field trial	-
2	Small Arms	PLR Systems Pvt Ltd.	Mr. Ajay Soni +91 9910501470 ajaysoni@plrsystem.in	TRL 7+	Field trial	May be tried by police/ CAPFs for their use.
3	Weapon Storage & Management Systems	R.H. Mechatronics Pvt. Ltd.	Mr. Niraj Tayal +91 9592999211 niraj.tayal@yahoo.co.in	TRL 7+	Need modification / Further product development	Interesting product, may be developed for individual needs of police/forces.
4	Water Jet Disruptor	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 7+	Field trial	Good product. May be tried in field conditions.
5	Advance Optical Combat Gun Sight (ACOG)	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
6	Ruggedized Miniature Reflex (RMR)	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
7	The Trijicon MRO™	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
8	Corner Sight	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
9	SLR Conversion Kit	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
10	Modular Vertical Fore Grip (All Weapon)	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommend-ation by ESC	Remarks by ESC
11	Nite Site	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.
12	Tactical Observation Camera	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for Field trials.

Big Data & Predictive Analytics

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
1	Mobile forensic solutions	Precision Electronics Ltd.	Mr. Deepak Jagga +91 9910383140 deepak.jagga@pel-india.com	TRL 4-6	Pilot project	The product appears useful; however, its functionalities and capabilities will have to assessed vis-à-vis similar marketed product.
2	ArcGIS Enterprise Framework	Esri India	Mr. Anil K. Yadav +919810085284 aky@esri.in	TRL 4-6	Pilot project	
3	F6- Handheld Laser Scanner	Ansari Precision Instruments Ltd / Roter Group of Companies	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 4-6	Pilot project	
4	SAS Solution	SAS Institute India Pvt. Ltd.	Mr. Mahesh Bangera +91 9833717073 Mahesh.Bangera@sas.com	TRL 4-6	Pilot project	
5	Third Eye - Dataval Face Detection Solution	Dataval Analytics	Col. Haridas M +91 8586965402 haridasm@datavalanalytics.com	TRL 4-6	Field Trial	
6	Intelliworker	Vehere Interactive Pvt Ltd	Mr. Karan Sablok +91 9871102567 Karan.sablok@vehere.com	TRL 4-6	Pilot Project	
7	E-FIR	Gnani Innovations Private Limited	Mr. Ananth Nagaraj +91 9916008309 Ananth@gnani.ai	TRL 4-6	Field trial	

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
8	System for modelling and analysis of terrorism for counter-terrorism strategies	Smart Systems and Operations Laboratory, IIT Kanpur	Dr. Deepu Philip +91 9532095064 dphilip@iitk.ac.in	TRL 4-6	Field trial	
9	Move Gadgets and App - GPS IoT	CE Info Systems Pvt. Ltd. (MapmyIndia)	Ms. Sonal Bahuguna +91 8527179791 contact@mapmyindia.com	TRL 7+	Pilot Project	The product would be very useful to all the forces to track vehicle movement.

Body Armour

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommen-da-tion by ESC	Remarks by ESC
1	Ballistic Shield	Star Aerospace Industries	Mr. Jagmohan Sing +91 9756600839 jagmohan.singh@staerospacepltd.com	TRL 7+	Field trial	May be conducted field trials.
2	Quick Conversion' Air Ambulance Modules for Disaster Relief & Emergency Medical Services (EMS)	Sika Interplant Systems Limited	Mr. Ketan Patil +91 9482690650 nbd@sikaglobal.com	TRL 7+	Field trial	May be called for demonstrations / trials by police / forces.
3	Fusion Revolution System	TVS Sundaram Industries Pvt Ltd	Mr. Chandra Kumar +91 8762452798 defence@sipltvs.in	TRL 7+	Field trial	May be tried & tested in field conditions.
4	India Vest QR	TVS Sundaram Industries Pvt Ltd	Mr. Chandra Kumar +91 8762452798 defence@sipltvs.in	TRL 7+	Field trial	May be tried in Indian Conditions.
5	Full Body Protectors	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
6	Anti-Riot Helmets	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommen-da-tion by ESC	Remarks by ESC
7	Anti-Riot Gas Mask	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
8	Anti-Ballistic Combat Goggles	Aureole Inspecs India Private Limited	Mr. Vivek Kak +91 9810670663 support@aureoleinspecs.com	TRL 7+	Field trial	May be tried in field conditions / Lab tests.

Communication Equipment including Satellite Telephone

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommen-dation by ESC	Remarks by ESC
1	LiveU	Precision Electronics Ltd.	Mr. Deepak Jagga +91 9910383140 deepak.jagga@pel-india.com	TRL 7+	Field Trial	Product can be useful to force operating in remote areas with mobile/ wi-fi impoverished areas with low band width.
2	Satellite Modems	Precision Electronics Ltd.	Mr. Deepak Jagga +91 9910383140 deepak.jagga@pel-india.com	TRL 7+	Field Trial	It does not seem a mission critical system for police forces.
3	Source of Sound	Star Aerospace Industries	Mr. Jagmohan Singh +91 9756600839 jagmohan.singh@staerospacepltd.com	TRL 7+	Field Trial	Recommended for field trial and assessment before pilot project
4	Pointlink - Offshore Communication Solution	Ceragon Networks (India) Pvt. Ltd.	Mr. Dhananjay Kumar Rakesh +91 8447378969 kumarr@ceragon.com	TRL 7+	Does not meet the requirement	The floating stabilized datalink can be useful for coastal forces. They must evaluate its requirement for their needs
5	100Mbps MW System (HCRR) IP Radio	HFCL Limited	Mr. Shiv Gautam +91 8287108407 shiv.gautam@hfcl.com	TRL 7+	Pilot Project	The product would be useful for CAPF near the border posts.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommen-dation by ESC	Remarks by ESC
6	LEX L11	Motorola Solutions India Pvt Ltd	Mr. Vivek Prakash +91 8800475554 vivek.prakash@motorolasolu-tions.com	TRL 7+	Pilot Project	This product gives better connectivity and situational awareness for personnel operating in mobile phone covered areas.
7	APCO	Motorola Solutions India Pvt Ltd	Mr. Vivek Prakash +91 8800475554 vivek.prakash@motorolasolu-tions.com	TRL 7+	Pilot Project	All police forces are already using earlier models/versions of equipment by Motorola. These models are improvements with double display on handset and location determination of team members

Cyber Security / Cyber Crime Management

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
1	Voice Surveillance	Gnani Innovations Private Limited	Mr. Ananth Nagaraj +91 9916008309 ananth@gnani.ai	TRL 4-6	Field trial	
2	Emergency Auto responder and Incident Documentation tool	Gnani Innovations Private Limited	Mr. Ananth Nagaraj +91 9916008309 ananth@gnani.ai	TRL 4-6	Field trial	
3	Blockchain based FIR management system	IIT Kanpur	Mr. Ras Dwivedi +91 9416212814 dwivedi@cse.iitk.ac.in	TRL 4-6	Field trial	
4	Fingermark Detection	IIT Kanpur	Prof. S. Anantha Ramakrishna +91 9651777666 sar@iitk.ac.in	TRL 4-6	Field trial	

Drone & Anti-Drone Technologies

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
1	Endure 15	IIT Kanpur / Endureair Systems Pvt. Ltd.	Dr. Abihshek +91 8765069138 admin@endureair.tech; abhish@iitk.ac.in	TRL 4-6	Field trial	
2	Endure BiTs	Endureair Systems Pvt. Ltd.	Dr. Abihshek +91 8765069138 admin@endureair.tech; abhish@iitk.ac.in	TRL 4-6	Field trial	
3	A400-Max	Asteria Aerospace Pvt Ltd.	Mr. Alok Nautiyal +91 7899770379 alok.nautiyal@asteria.co.in	TRL 7+	Field trial	Will be useful to all CAPF's & State police forces as limited surveillance / monitoring device. The pay load is very small ~ 400 gm and gimbal stability is not confirmed. The company should approach CAPF's field trials.
4	A410	Asteria Aerospace Pvt Ltd.	Mr. Alok Nautiyal +91 7899770379 alok.nautiyal@asteria.co.in	TRL 7+	Field trial	Same as above
5	Genesis	Asteria Aerospace Pvt Ltd.	Mr. Alok Nautiyal +91 7899770379 alok.nautiyal@asteria.co.in	TRL 7+	Field trial	Useful tool. It should be interface with video analytics, AI & cloud storage.
6	DroneCannon	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	The products of M2K Technologies Pvt. Ltd. are sub parts of a comprehensive anti-drone solution. This will be useful to the police forces. The cost seems to be very high with unreasonably high database upgrade charges as well. Comprehensive field trials are recommended.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
7	Drone Gun MK III	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
8	Drone Gun Tactical	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
9	DroneNode	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
10	DroneOpt1	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
11	DroneOpt2	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
12	DroneShield Complete	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above
13	RadarOne	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@ M2Ktechnologies. Com	TRL 7+	Field trial	Same as above

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
14	RadarTwo	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	Same as above
15	RadarZero	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	Same as above
16	RfOne	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	Same as above
17	RfPatrol	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	Same as above
18	RfZero	M2K Technologies Pvt. Ltd.	Mr. Vikash Bhagchandka +91 9818199996 viakshb@M2Ktechnologies.Com	TRL 7+	Field trial	Same as above
19	Switch UAV	ideaForge Technology Pvt. Ltd.	Ms. Prajacta Kulkarni +91 9152030613 business@ideaforge.co.in	TRL 7+	Field trial	The UAV is NPNT ready and can be tried out by the forces for their requirement.
20	NETRA V Series UAV	ideaForge Technology Pvt. Ltd.	Ms. Prajacta Kulkarni +91 9152030613 business@ideaforge.co.in	TRL 7+	Field trial	The Netra UAV is used in various forces. This version will be an improvement over existing models for surveillance operations.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
21	NINJA UAV	ideaForge Technology Pvt. Ltd.	Ms. Prajacta Kulkarni +91 9152030613 business@ideaforge.co.in	TRL 7+	Pilot project	The UAV is NPNT compliant as claimed by vendor. The UAV can be considered by various forces for their requirements and modified accordingly.
22	Drone Deterrence System	Memco Associates India Pvt Ltd	Mrs. Alka Panda +91 9845124148 alka@memco.in	TRL 7+	Need modification / Further product development	The drone deterrence system searches for communication frequency channels on commercial drones. This would not apply to rogue drones operating on any arbitrary frequency for communication. The system would need major modification for the Indian context.
23	Fortem Technologies	Jugapro India Pvt Ltd	Maj Gen (Retd.) Madan Pal Singh Baweja +91 9711900159 Madan57@hotmail.com; jugapro@jugapro.com	TRL 7+	Field trial	The anti-drone system is presently claimed in use by US Security Agencies. The drone hunter would be very valuable for security of vital installations.
24	Multi Utility (Tear Gas) Drone	Dynamatic Technologies Limited	Mr. Nagaraj B K +91 9880738389 bkn@dynamatics.net	TRL 4-6	Need modification / Further product development	The product concept is good. It has not been demonstrated for the purpose (tear gas). The company should be asked to be demonstrated in a controlled environment and go for field trials.
25	HEAVY LIFT DRONE	Dynamatic Technologies Limited	Mr. Nagaraj B K +91 9880738389 bkn@dynamatics.net	TRL 4-6	Field trial	The product concept is good. This needs to be demonstrated and field tested.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
26	PATANG 2 – Tethered Copter	Dynamatic Technologies Limited	Mr. Nagaraj B K +91 9880738389 bkn@dynamatics.net	TRL 4-6	Field trial	The concept is good and can be very useful to all the police forces. It should be field tested and evaluated.
27	Vector / Scorpion	Ansari Precision Instruments Ltd. / Roter Group of Companies	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 7+	Field trial	The product is well developed and can be used for surveillance and crowd monitoring by all forces.
28	Guardion (DIEHL Defence - Detection and Countering commercial drones)	Niveshan Technologies India Pvt Ltd	Mr. Ashish Chawla +919999319549 Ashish.chawla@ntplindia.in	TRL 7+	Field trial	The system uses a Electromagnetic pulse to disrupt the electronics. UAVs & IEDs can be disabled using the technique. Field trials need to be carried out in India. Cost in very high.
29	Vtol Uav	Vtol Aviation India Pvt Ltd	Mr. Kalyan Chowdhury +91 9819248877/ +91 9820638272 md@vtolaviations.com	TRL 4-6	Field trial	The products need to be evaluated for specific requirements of the forces and field tested after demonstrations.
30	VTOL Akshat HNX	VTOL AVIATION INDIA PVT LTD	Mr. Kalyan Chowdhury +91 9819248877/ +91 9820638272 md@vtolaviations.com	TRL 1-3	Need modification / Further product development	The product is in the concept stage. It will need evaluation once prototype is available for demonstrations.
31	'Akshayan'	VTOL AVIATION INDIA PVT LTD	Mr. Kalyan Chowdhury +91 9819248877/ +91 9820638272 md@vtolaviations.com	TRL 4-6	Does not meet the requirement	This product does not covers the end user (Police Forces). A technology integrator will be the end user for this product.
32	Anti UAV / Anti Drone Solutions	Hild Defence and Aerospace Pvt. Ltd.	Mr. Prathap Rajah Sunder Singh +91 9840052699 info@hildad.com; md@hildad.com	TRL 1-3	Need modification / Further product development	Only the RF sensor for UAVs in claimed to be developed. The product is in concept stage only now.

Less than Lethal Technologies

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
1	Mobile/ Containerized Solutions with all accessories Viz; masts, power systems, air-conditioning, etc.	Precision Electronics Ltd.	Mr. Deepak Jagga +91 9910383140 deepak.jagga@ pel_india.com	TRL 7+	Field trial	Interesting product, may be loaded into for trials in field.
2	Various range of TSMs and Launchers	Narendra Explosives Limited	Mr. Siddharth Jain +91 9837555007 info@narendraco.com	TRL 7+	Field trial	May have trials of gas gun and other skills.
3	Modular Vehicle Security Barricades	Krishna Allied Industries Pvt Ltd.	Mr. Jay Shah +91 9819715146 jay@ krishnaallied.com	TRL 7+	Field trial	May have trials in field conditions.
4	Automatic Tyre Deflator Machine	Krishna Allied Industries Pvt Ltd.	Mr. Jay Shah +91 9819715146 jay@ krishnaallied.com	TRL 7+	Field trial	Should be tried in field conditions.
5	Pepper Launching System	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.
6	Rubber Ball Launcher A unique Rubber	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.
7	Handheld Laser Dazzler	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.
8	Rakshu Kit	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.
9	Shock Glove	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.
10	Shock Systems	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@ gmail.com	TRL 7+	Field trial	Recommended for field trials.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
11	High Impact Resistant Shield & Batons	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
12	Group Shield	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
13	Acoustic Hailing Shield and Hand Held Device	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
14	Alternative Ballistics	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.

Mine Protection Vehicles (MPV)

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
1	Kalyani M4	Bharat Forge Ltd.	Mr. Anil Verma +91 8308223400 anil.verma@bharatforge.com	TRL 7+	Field Trial	Full evaluation for firms claims may be conducted & trials/testing in labs are required.
2	Kalyani Maverick	Bharat Forge Ltd.	Mr. Anil Verma +91 8308223400 anil.verma@bharatforge.com	TRL 7+	Field Trial	The claims of firm may be Tried/ Tested in labs & field trials may be conducted.
3	APC, Military Armoured Vehicles	Minerva Special Purpose Vehicle Pvt Ltd.	Mr. TKS Varma +91 9632349943 tks@mspv.in; suyog@mspv.in	TRL 4-6	Need modification / Further product development	The product required the labs testing.

Surveillance Equipment (Day & Night)

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
1	Z+F 3D laser scanners	Ansari Precision Instruments Ltd / Roter Group of Companies	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 4-6	Pilot project	
2	HD PTZ Dome Network Camera	Hild Defence and Aerospace Pvt. Ltd.	Mr. Prathap Rajah Sunder Singh +91 9840052699 info@hildad.com; md@hildad.com	TRL 4-6	Need modification / Further product development	The product description form have not been filled properly (cut & paste from previous product.)
3	Optical Sights	Star Aerospace Industries	Mr. Jagmohan Singh +91 9756600839 jagmohan.singh@staerospacepltd.com	TRL 7+	Field trial	May be called for trials after the technical evaluation.
4	InfiVision	Optimized Electrotech Pvt Ltd	Mr. Shivang Anirudh Mishra +91 9909912707 marketing@optimizedelectrotech.com	TRL 7+	Field trial	Can be tried in field conditions.
5	Secure Global Video Streaming Platform	Sika Interplant Systems Limited	Mr. Ketan Patil +91 9482690650 nbd@sikaglobal.com	TRL 7+	Field trial	
6	Mill grade thermal & day camera STY-39X-230TIZ by Infiniti	Jugapro India Pvt Ltd	Maj Gen (Retd) Madan Pal Singh Baweja +91 9711900159 Madan57@hotmail.com; jugapro@jugapro.com	TRL 7+	Field trial	Trials may be conducted in field conditions.
7	Nx Witness 4.0 from Networkoptix, USA	Jugapro India Pvt Ltd	Maj Gen (Retd) Madan Pal Singh Baweja +91 9711900159 Madan57@hotmail.com; jugapro@jugapro.com	TRL 7+	Field trial	May call for field trials.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
8	SCL-SDM03MVIR-WD3533X Camera by Securi corp technologies	Jugapro India Pvt Ltd	Maj Gen (Retd) Madan Pal Singh Baweja +91 9711900159 Madan57@hotmail.com; jugapro@jugapro.com	TRL 7+	Field trial	May call for demo/trials.
9	PATANG 1	Dynamatic Technologies Limited	Mr. Nagaraj B.K. +91 9880738390 bkn@dynamatics.net	TRL 4-6	Field trial	For demo.
10	A-1 Vibration sensor (PIDS)	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400970 adhar.chawla@a1fenceproducts.com	TRL 7+	Eligible for procurement immediately	
11	Rugged Camera Surveillance System	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400970 adhar.chawla@a1fenceproducts.com	TRL 7+	Field trial	
12	FOPIDS2Z	Fiber Optics Sensing Solutions Pvt Ltd a subsidiary of TVS Sensing Solutions	Mr. Hitesh Mehta +91 8861907373 Hitesh.foss@tvsss.co.in	TRL 7+	Field trial	May be useful for perimeter security, may call for trials.
13	FOPIDSMZ-C	Fiber Optics Sensing Solutions Pvt Ltd a subsidiary of TVS Sensing Solutions	Mr. Hitesh Mehta +91 8861907373 Hitesh.foss@tvsss.co.in	TRL 7+	Field trial	May call for trials.
14	PTZ Thermal Camera	VVDN Technologies Pvt Ltd.	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 7+	Need modification / Further product development	Modifications are required.
15	Rescue Radar	Ansari Precision Instruments Ltd / Roter Group of Companies	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 7+	Pilot project	Demo can be done.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
16	Sniper Detector with Laser Dazzler	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 7+	Field trial	May be tried at field conditions.
17	Flexible Surveillance Device	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 7+	Field trial	May be tried by CAPFs / Police Forces.
18	IR Videoscope	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 7+	Field trial	May be tried by Forces / Police.
19	IR Under Door Camera	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 7+	Field trial	Interesting equipment, may be tried.
20	Various products for Security sector	Electronics Corporation of India Limited	Brig. (Retd) Kuldeep Singh Dalal +91 7838666289 zmnorth@ecil.co.in	TRL 7+	Eligible for procurement immediately	Already in Govt. establishment.
21	Video Torch	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
22	Friend/Foe Identifier	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
23	Swat Scope	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
24	Perimeter Infrared Intruder Security Alert	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.
25	Heavy Duty Throat Mic	SRG Techno Pvt. Ltd.	Mr. Ajay Gupta +91 9871407660 ajaygupta.srg@gmail.com	TRL 7+	Field trial	Recommended for field trials.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
26	Compact Surveillance Radar	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400970 adhar.chawla@a1fenceproducts.com	TRL 7+	Field trial	
27	Findar	Ansari Precision Instruments Ltd / Roter Group of Companies	Mr. Kushagra Agrawal +91 9871800023 kushagra@apiroter.com	TRL 7+	Field trial	
28	10.1" Rugged Tablet PC	Dynalog India Limited	Mr. Amit Tawde +91 9820758573 bbsonawane@dynalogindia.com; amitt@dynalogindia.com	TRL 7+	Field trial	
29	Buried Seismic Sensor	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400970 adhar.chawla@a1fenceproducts.com	TRL 7+	Field trial	

Others

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
1	Smart Armory	Sri Hans Energy Systems Pvt. Ltd.	Mr. Saurabh Pilania +91 9670833783 saurabh@hansenergy.in	TRL 4-6	Pilot project	The banquet of products is useful and well designed. There should be pilot project. After the same it can be recommended for update in police/ CAPS etc.
2	Smart Baton	Sri Hans Energy Systems Pvt. Ltd.	Mr. Saurabh Pilania +91 9670833783 saurabh@hansenergy.in	TRL 4-6	Pilot project	Same as above
3	Artificil Intelligence Enabled Smart Grip	Sri Hans Energy Systems Pvt. Ltd.	Mr. Saurabh Pilania +91 9670833783 saurabh@hansenergy.in	TRL 4-6	Pilot project	Same as above

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
4	Smart Women Safety Device	Sri Hans Energy Systems Pvt. Ltd.	Mr. Saurabh Pilania +91 9670833783 saurabh@hansenergy.in	TRL 4-6	Pilot project	Same as above
5	Weapon Safety System	Sri Hans Energy Systems Pvt. Ltd.	Mr. Saurabh Pilania +91 9670833783 saurabh@hansenergy.in	TRL 4-6	Pilot project	Same as above
6	Deep Search Metal Detector	BHARAT FORGE LIMITED	Col (Retd) Girish Wagh +91 7387019020 girish.wagh@bharatforge.com	TRL 4-6	Need modification / Further product development	The product done not appears to be a significant improvement & is largely customization of an imported product form a German OEM.
7	Complete Portfolio for detecting mines, IEDs, UXO	Vallon GmbH	Mr. Markus Vallon + 49 1705570 660 markus.vallon@vallon.de	TRL 7+	Pilot project	The product of the company appeared to be well designed. However, user reviews and costing were not available.
8	Security Electric Fence (PIDS)	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400969 adhar.chawla@a1fenceproducts.com	TRL 4-6	Pilot project	
9	A-1 Garrison Fence	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400969 adhar.chawla@a1fenceproducts.com	TRL 4-6	Pilot project	
10	Globus Virtual Classroom Solution	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	The product of the company are useful especially in training environment.
11	Globus Video Data Wall	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	Same as above

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
12	Globus Digital Board Solution	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	
13	Globus Digital Touch Table	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	Same as above
14	Globus Vertical Signage	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	Same as above
15	Globus Digital Podium	Globus Infocom Limited	Ms. Kiran Dham +91 8800595829 kiran@globusinfocom.com	TRL 4-6	Field trial	Same as above
16	Grenade Trigger Pouches	TVS Sundaram Industries Pvt Ltd	Mr. Chandra Kumar +91 8762452798 defence@sipltvs.in	TRL 7+	Pilot project	
17	All Terrain Tactical Hauler	TVS Sundaram Industries Pvt Ltd	Mr. Chandra Kumar +91 8762452798 defence@sipltvs.in	TRL 7+	Pilot project	
18	Multi Spectral Adaptive Camouflage Coatings	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 1-3	Need modification / Further product development	
19	Multi Spectral Adaptive Camouflage Suits	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 1-3	Need modification / Further product development	
20	Multi Spectral Camouflage Nets	Almighty Techserv	Mr. Manish Dalmia +91 9810038557 ceo@almightytechserv.com	TRL 1-3	Need modification / Further product development	

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommendation by ESC	Remarks by ESC
21	Man-portable solution	FC TecNrgy Pvt. Ltd.	Mr. Saurabh Nehra +91 9315165071 saurabh@fctecnrgy.com	TRL 7+	Eligible for procurement immediately	
22	MFSTab II	Mantra Softech India Pvt. Ltd.	Mr. Jiten Joshi +91 7485980077 Jiten.joshi@mantratec.com	TRL 7+	Pilot project	
23	Mterminal 100	Mantra Softech India Pvt. Ltd.	Mr. Jiten Joshi +91 7485980077 Jiten.joshi@mantratec.com	TRL 7+	Pilot project	
24	Smart Infra-Red Barriers	Hild Defence and Aerospace Pvt. Ltd.	Mr. Prathap Rajah Sunder Singh +91 9840052699 info@hildad.com; md@hildad.com	TRL 1-3	Does not meet the requirement	Product is in concept stage. Description is not available in the forms or with vendor.
25	Command Control Center with Video Wall Mounting	Hild Defence and Aerospace Pvt. Ltd.	Mr. Prathap Rajah Sunder Singh +91 9840052699 info@hildad.com; md@hildad.com	TRL 1-3	Does not meet the requirement	The product description are not available properly in the forms or with vendor.
26	Bomb Blanket	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo is possible.
27	Bomb Suits	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo is possible.
28	Boot Anti Mine Infantry	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo is possible.
29	Electronic Stethoscope	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Pilot project	Already in use with the Indian Army.

Sl. No	Product Name	Company Name	Contact Details	Product Maturity	Recommenda-tion by ESC	Remarks by ESC
30	Deep search metal detector - model VMH4	Vallon GmbH / M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo is possible.
31	Ferrous locator / Magnetometer / Bomb locator model VX1	Vallon GmbH / M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Pilot project	Demo is possible.
32	Portable X ray Machine	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Field trial	Demo to be arranged
33	Search Suit / Half Body Suid / Tactical Suit	M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo to be arranged (750 crore, AD-30)
34	Deep search metal detector - model VMC4	Vallon GmbH / M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo Purpose
35	Dual Technology metal detector - model VMR3G	Vallon GmbH / M/s R. K. & Sons	Mr. Mukesh Sharma +91 9823052889/ 9823572227 info@rksons.in	TRL 7+	Eligible for procurement immediately	Demo available
36	Rapid Deployment Police check Post	A-1 Fence Products Company Pvt Ltd	Mr. Adhar Chavla +91 9667400970 adhar.chawla@ a1fenceproducts. com	TRL 4-6	Pilot project	


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ANNEXURE II

Technology Readiness Level (TRL)

Technology Readiness Level	Description
1. Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include paper studies of a technology's basic properties.
2. Technology concept and/or application formulated	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.
3. Analytical and experimental critical function and/or characteristic proof of concept	Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.
4. Component and/or breadboard validation in laboratory environment	Basic technological components are integrated to establish that they will work together. This is relatively "low fidelity" compared to the eventual system. Examples include integration of "ad hoc" hardware in the laboratory.
5. Component and/or breadboard validation in relevant environment.	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment. Examples include "high fidelity" laboratory integration of components.
6. System/subsystem model or prototype demonstration in a relevant environment.	Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high- fidelity laboratory environment or in simulated operational environment.
7. System prototype demonstration in an operational environment.	Prototype near, or at, planned operational system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in an operational environment such as an aircraft, vehicle, or space. Examples include testing the prototype in a test bed aircraft.
8. Actual system completed and qualified through test and demonstration.	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation of the system in its intended weapon system to determine if it meets design specifications.
9. Actual system proven through successful mission operations.	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation. Examples include using the system under operational mission conditions.



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