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**Integrated Intellectual Property Rights (IPR):  
Framework for the State of Andhra Pradesh**

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## **Integrated Intellectual Property Rights (IPR): Framework for the State of Andhra Pradesh**

### **Abstract**

Government of India has unveiled the National Intellectual Property Rights (IPR) Policy encompassing the entire value chain for IPR management. This initiative by Government of India is the need of hour for the Nation to transform into a stronger entrepreneurial ecosystem, expand investment portfolio and accelerate economic growth. Indian states are aggressive in building state level entrepreneurial ecosystems to give a boost to Innovation culture by unveiling state Innovation and Start-up policies, Industrial Policies, Information Technology and electronics policies and several other policies. Indian states are committed to progress in building start-up ecosystems and to capture the economic wealth arising on account of by start-ups. One important aspect for the states is to formulate a state IPR Policy and align it with the state Start-up policy and other economic policies. The state IPR policy should focus on creating IPR awareness, developing a comprehensive platform for filing and tracking IP applications, technology transfer and ways to connect with National IPR platform. The state of Andhra Pradesh is proactively bringing in an Innovation and Start-up culture, intending to produce an entrepreneur in every family.

This study is an attempt to propose an IPR framework for the Government of Andhra Pradesh, which would be a basis for state IPR Policy. A detailed study of the “AP Innovation and Start-up Policy 2014-2020”, formulated under able leadership of the Honourable Chief Minister is succinct and well designed. One critical factor that could provide further strength to the policy is the linkage of the proposed IPR framework of state to the “AP Innovation and Start-up Policy 2014-2020”. This study provides findings of Andhra Pradesh IPR environment and recommendations to build a sustainable IPR ecosystem.

**Keywords:** Andhra Pradesh Intellectual Property Rights Policy, Information Technology, Innovation, Intellectual Property Rights, Startups.

## 1. Introduction

Intellectual property rights (IPR) are chief source for any firm or organisation to appropriate the value of their inventions. IPR help in establishing legal and enforceable exclusive rights on the exploitation of specified inventions and creative works for a limited times and provide incentive mechanism for innovation. This enables the innovators and entrepreneurs to appropriate the benefits of their inventions. IPR helps in diffusing technology and creative content the IPRs itself (OECD, 2004a; Ordoover, 1991; Bessen, 2005).

The use of patents has increased and broadened in the last decades. Firms use IPR initially to secure exclusive rights over their inventions, but they also use them to signal technological and design capacity, to build up reputation and strength in the market place (Arundel, 2001; Blind et al., 2006; Cohen et al., 2002; Somaya, 2012), increasingly also as ammunition against competitors, e.g. in bidding wars (Blind et al., 2006)

Based on the innovation studies and policy analysis, design and evaluation, IPR is also often used as an indicator of innovative capacity and performance of organisations, regions or countries (Archibugi, 1992). This function as indicator is in itself an important generator of patent numbers and patenting behaviour in general, although patents as indicators of innovation are highly contested, as they focus on specific modes and aspects of innovation and as the practice of patent registration is often linked.

IPR play a key role in the Innovation Policy because of the following reason IPR are crucial incentives for innovation because they establish potential for commercial exploitation, both by the inventor and through licensing IPR establish the exclusive rights to the inventor by granting innovation incentive and in the transfer of technology

### 1.1 Objective

The proposed Intellectual Property Rights (IPR) framework and set of guidelines links itself with the objectives of the existing “AP Innovation and Start-up Policy 2014-2020”.

It is the suggestion of the team that the AP state IPR framework should aim at realizing the following objectives:

1. Effective and efficient filing & licensing of patents, trademarks, design & copyrights to provide a fillip to start-ups.
2. Promotion of the mentioned IPRs through their commercialization.

3. The state's IPR framework should enhance '*destination advantage*' of AP state insofar as overseas and domestic investors are concerned.
4. The state IPR framework should seek transformation of knowledge economy thus improving the living standards of the people of AP state through state-of-art technological solutions and interventions that focus on health, access to energy and digital infrastructure.
5. The state IPR framework should facilitate employment generation amongst the educated youth of AP state.

## 1.2 Methodology

IIM Bangalore will undertake the following practices to provide the below said deliverables:

1. Adoption of lifecycle management approaches to IP assets, whereby the entire lifecycle of IPR assets will be managed from 'cradle to grave'. The study by IIM Bangalore will adopt the life cycle approach with reference to four main IPRs viz, patents, trademarks, designs and copyrights.
2. IIM Bangalore would perform a comparative study of IPR/Start-up policies of a cross section of states to glean best practices and processes. This study will focus on start-up policies of the states of Karnataka and Haryana apart from conducting a study of the National IPR Policy of Government of India. Global Innovation policies of nations leading in innovation will also be considered.
3. Examine the overall innovation ecosystem required to protect and promote commercialization of four types of IP generated in relation to the priorities mentioned in the AP Innovation & Start-up Policy 2014-2020.
4. Conduct field trips in AP state, visit incubators & accelerators in Tirupati & Vizag, besides conducting structured interviews and questionnaires with managers of incubators & accelerators.
5. Collate the perspectives of different stakeholders potentially connected to the innovation ecosystem – viz Government officials, Industrialists, Venture capitalists & Start-ups. This is done in order to understand the basic driving force that the state's IPR Policy should have.

### 1.3 Findings

The field work on the study was initiated in the month of April 2017 by the study team comprising of Anitha Botta and Jyothi Ganiger, after an elaborate process of literature reviews and field survey, the interim report has been formulated. The field survey in Andhra Pradesh entailed interview with a small sample of Start-ups from the incubators and accelerators. This was followed by five expert interviews based in Andhra Pradesh and Karnataka. The start-up sectors interviewed include Information Technology, Bio-technology, Energy, Food & Agri. Business, Health care, Retail services and Technology.

1. The world of standards on Intellectual Property Management as exemplified by the cases of China, Korea & Japan clearly indicates that proactive protection of innovations, IP awareness and commercialisation are critical to the development of Intellectual Property Rights policies.
2. The state of Andhra Pradesh has performed very well in providing enabling infrastructure and policies for innovations and start-up infrastructure. However the findings of the field survey indicated that more could be achieved in terms of greater Patent, Trade Mark and Designs fillings by start-up enterprises in Andhra Pradesh by providing help in filling IP applications, deframing expenses on the same and providing an exchange for technology transfer in the state.

## 2. Comparative Study of Global IPR System

This section provides a comparative study of Japan, China and Korea based on the U.S. Chamber International IP Index 2017 and World Intellectual Property Office (WIPO) Global Innovation Index 2016 rankings refer Figure 1. Looking at the economic performance, capacity to compete internationally, technology and capacity building, Japan, China and Korea which are considered to be most the innovative and industrialised Asian countries are chosen for the study. Japan continues be the innovation powerhouse and noticeable fact is that China breaking into the top 25 countries. China which is a middle income country has come into the mix of high income countries in terms of innovation performance and study improvement all the time.



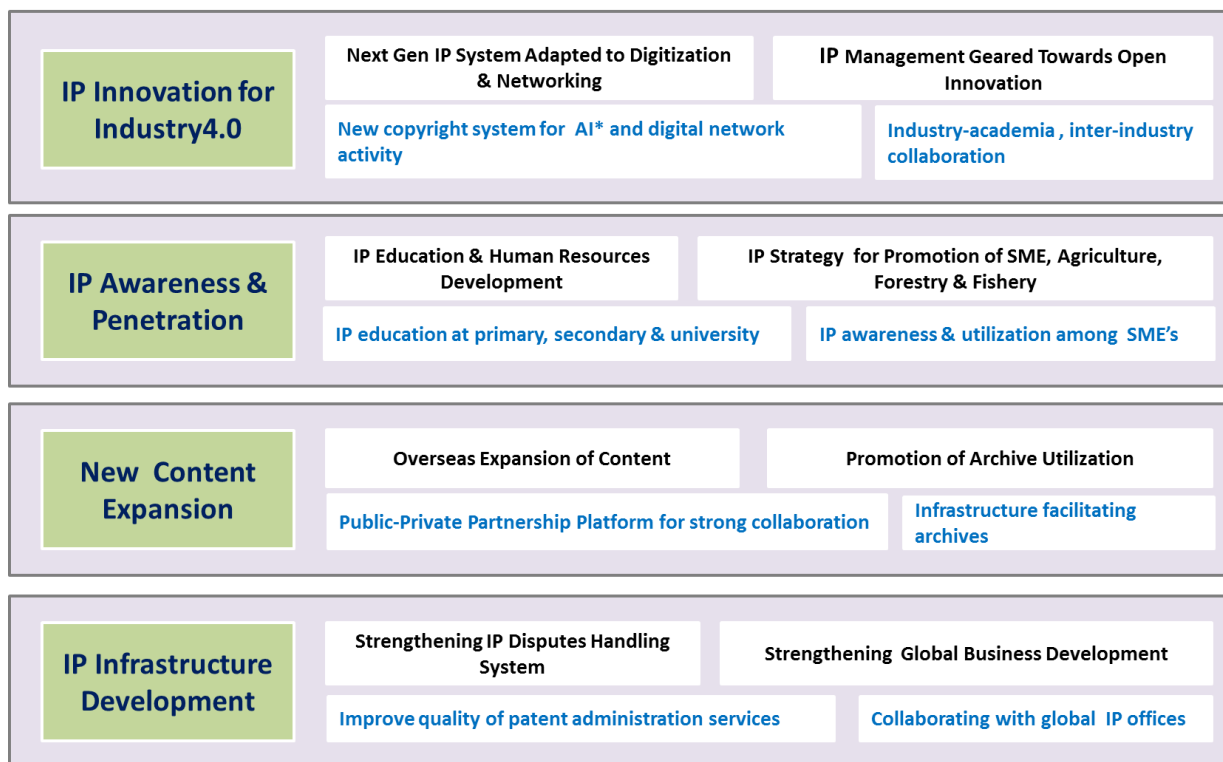
Source: GIPC IP Index 2017 Report, WIPO\_pub\_gii\_2017

**Figure 1: GIPC IP index**

## 2.1 Japan's Innovation Ecosystem and IPR Strategy

Japan ranks 4 in Global IP Index and 16 in Global Innovation Index 2016. The number of patent applications filed with the Japan Patent Office (JPO) was 318,381 in 2016. Though the number of filing has been gradually decreasing in recent years, the ratio of patent registrations by filing year has been increasing. This indicates that applicants have been steadily shifting their IP strategies from *quantity to quality*. In 2016, 44,495 PCT international applications were filed with the JPO as their receiving office, setting a new record high. In addition around 2.889 million patent applications were filed worldwide in 2015, which was also a record high. Under such circumstances, the JPO has been aiming to realize the “world’s fastest and utmost quality examination in IP system” so that once applicants obtain patents in Japan, they may also be able obtain patents abroad, even smoothly.

Japan has a strong legal protection and enforcement for IP. In the recent years Japan has worked extensively to improve IP registration procedures and make them less costly to obtain. With 4th industrial revolution underway and rapid technological innovations in Internet of Things, Big Data (BD) and Artificial Intelligence (AI), Japan has rolled out IP Strategic Program in 2016, Figure 2 capturing the most important aspects below.



\* Artificial Intelligence

**Figure 2: Highlights of Japan IPR Strategy Program 2016**

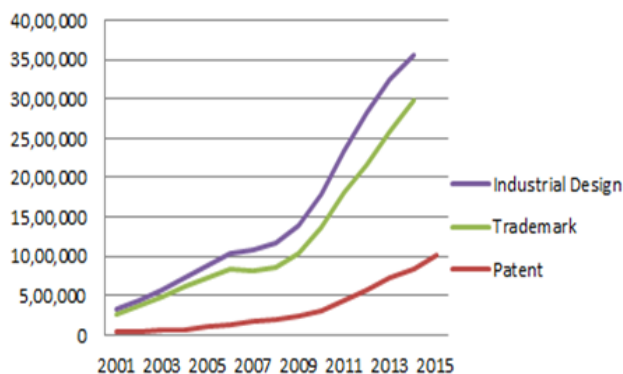
## 2.2 China's Innovation Ecosystem and IPR Strategy

China has transformed successfully from an agriculture centric economy to a world factory with remarkable urbanization and infrastructure, and foreign reserves. China's strong IP law and industries is the key to modernization. China's strong IP portfolio is instrumental for national development and competitiveness, and used it as a driver for sustainable growth in the knowledge economy era. China formulated a National Intellectual Property Strategy (NIPS)<sup>[31]</sup> in order to improve the capacity to create, utilize, protect and administer intellectual property. The key strategic aspects of NIPS are given below in Figure 3:

Highlights of China's National Intellectual Property Strategy	
Increased Capacity to Create IP	<ul style="list-style-type: none"> <li>Market oriented system with State Owned Enterprises (SOE) forming the backbone.</li> <li>Partnering with Universities, Researchers and Manufacturers</li> </ul>
Encouraging Commercialization & Utilization of IPRs	<ul style="list-style-type: none"> <li>Guide and support Universities and Research Institutes for commercializing IP to the SOE and industries.</li> <li>Stimulate application and industrialization of IP in SOE &amp; Industries</li> </ul>
Accelerating Development of Legal System for IP	<ul style="list-style-type: none"> <li>Improved legislation process, trial system, optimized judicial resource allocation, sound litigation system to handle judicial authentication,</li> <li>International cooperation in customs law enforcement</li> </ul>
Improved IP Law Enforcement	<ul style="list-style-type: none"> <li>Public service platform for IP</li> <li>Systems for examination and registration of IP to improve capacity building, optimize procedures, improve efficiency, reduce administrative cost</li> </ul>
Developing Intermediary Services for IPRs	<ul style="list-style-type: none"> <li>Strengthen technology to market needs and trading system needs</li> <li>Trading procedures simplified and reducing trading cost and services improved</li> </ul>
Developing IP Human Resources	<ul style="list-style-type: none"> <li>Development of IP expert databases and professional information network</li> <li>IP Training &amp; programs for conferring IP masters and doctoral programs.</li> </ul>
Promoting IP Culture & International Exchanges	<ul style="list-style-type: none"> <li>Publicizing information about IP led by the government &amp; create public awareness of IP</li> </ul>

**Figure 3: Highlights of China's IPR Strategy**

China has 146 high tech innovation zones and 17 regional innovation demo zones. The operation revenue of the high tech innovation zones in 2016 is expected to reach 28.3 trillion yuan, and increase by 11.5 % Year on Year and total industrial output value is expected to reach 20.5 trillion yuan, up 10.3 percent year on year. The high tech innovation zones are in the forefront of technology sectors like Internet+, Artificial Intelligence, Biomedicine, Smart Manufacturing, Supercomputing, Gene Sequencing and New Material Technologies. The statistics in Figure 4 demonstrates that China is a vital force in innovation and remains one of the major streams of the rapid growth in global IP applications.



**Figure 4: China's IP filing Pattern 2015**



**Collaboration with Academic Institutes:** China is partnering with a galaxy of academic institutions, research and development (R&D) centres and industries, to attract innovation and boost creativity. This is a powerful driver for economic and social development. Higher education institutions and scientific research institutes are encouraged to play important roles in the creation of intellectual property. These institutes choose important technological areas to create a number of core self-relied intellectual properties and technical standards. China emerges as an important origin of patents in 3D printing, nanotechnology and robotics.

**R&D Expenditure:** China's share of global R&D expenditure in 2015 was 20%, well above Japan's at 9% or Germany's at 6% and second only to that of the U.S. at 26%. Total R&D investment in India (as a proportion of GDP) grew from 0.9% in 2000 to 2.0% in 2015 and is expected to reach a targeted 2.5% by 2020. The government has also launched a number of programs aimed at cultivating scientific talent. The more prominent among these include the National Science Fund for Distinguished Young Scholars which provides research support to deserving scientific projects.

In 2016, the Chinese Government issued and implemented Intellectual Property Powerhouse by creating a culture of respecting knowledge, admiring innovation, abiding by the law, enhancing public awareness of IP. China has organized many IP-related activities like IP Publicity Week, pilot model projects for IP education in primary and secondary schools during important events like World Intellectual Property Day

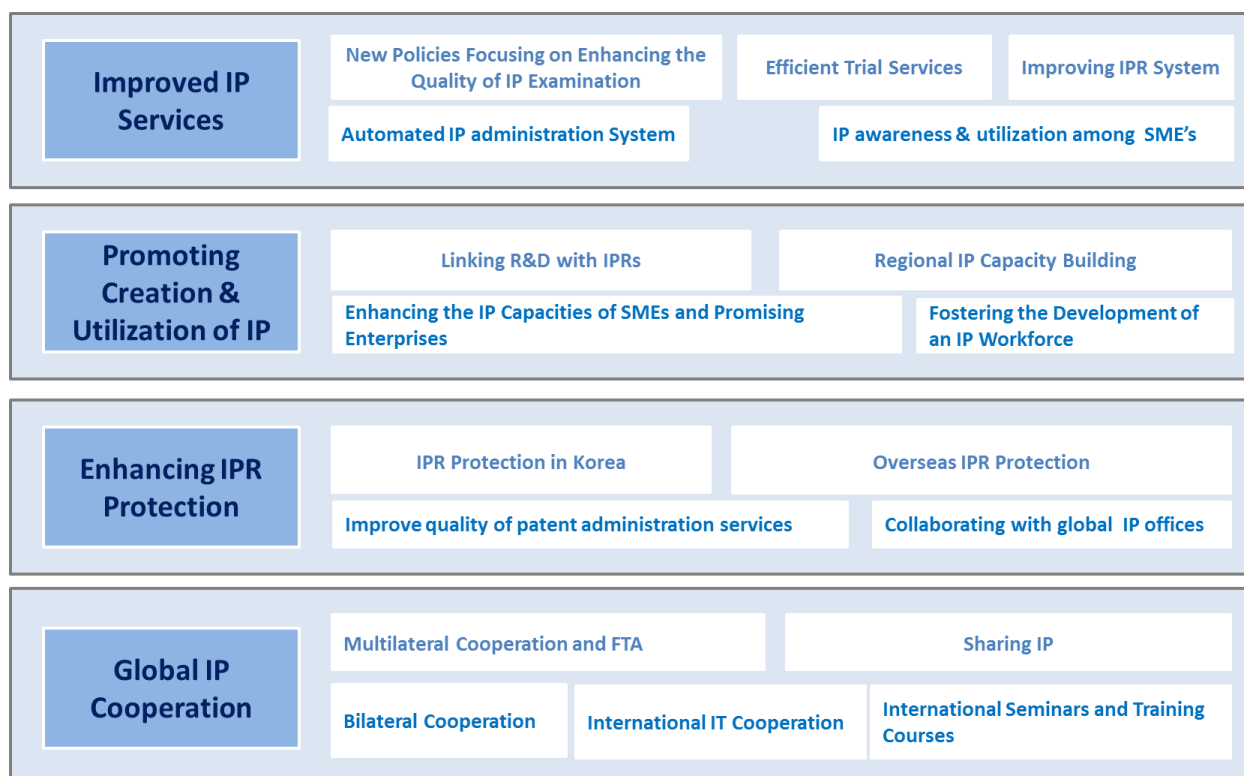
**Strengthen the Linkages between IPR Policy and Other Economic Policies:** Patent numbers are not just affected by dynamics of technology. Patents are affected by changes in the patenting behaviour of firms, responding to changes in patent law, patent fees, and competition etc. Co-operation between patent offices and relevant government agencies has been established and unification is maintained between IPR and related policies, mainly policies affecting FDI and innovation.

## 2.3 Korea

### 2.3.1 Korea's Innovation ecosystem and IPR Strategy

WIPO has unveiled World IP Indicator in December 2016, since 2007, Korea ranked first for 9 consecutive years (Since 2007) in regard to the number of resident patent applications<sup>28</sup>]. The number of PCT application increased by 11.1 percent, from 14,594 in 2015 to 15,595 in

2016, which is the 5th largest amount by country of origin. Korean Intellectual Property Office (KIPO) is putting great effort to implement the Intellectual Property administration along the lines of strengthening the Korea's competitiveness. Highlight's of Korea's IPR strategy is given in Figure 5 **Error! No bookmark name given..**



**Figure 5: Highlights of Korea's IP Strategy**

Importance is given on further developing its examination services, as well as promoting economic sustainability through a virtuous cycle of IP creation, utilization, and protection. Cooperation with foreign IP offices and other international organizations is strengthened through IP-DESKs that protect and promote IPRs belonging to Korean companies doing business overseas.

As Korean goods are increasingly being counterfeited in certain overseas markets, Comprehensive Protection Measures for Korean-Brands are established to increase the credibility of the Korean brands and prevent damage to the national image.

With increasing focus on Fourth Industrial Revolution, and trends based on artificial intelligence and big data, Korea has introduced recent policies, which include revisions to the

Korean Patent Act, that are aimed at ensuring the efficient granting of patents and preventing substandard patents.

SME's IP Business Cycle[21]: In order to raise the innovation capacities of SMEs in APEC region and enable them to better access regional and global markets, KIPO has proposed Guidebook for SMEs' IP-Business Cycle that attempts to foster an environment in which SMEs can create IPR and better utilize IP.

The Guidebook helps APEC member states to choose the suitable policies taking into consideration their economic and political conditions. Guidebook is based on IP creation, including prior art search, and dispatching IP experts, IP utilizing, including building prototypes of superior invention goods, and supporting evaluation of patent technology. With the 4th industrial revolution it is expected that the Guidebook will contribute to strengthen Korea's status as an IP advanced country

### 3. Comparative Study of State Innovation Start-up Policy

#### 3.1 Karnataka: Karnataka Start-up Policy 2015-2020

Vision envisaged for Karnataka Start-up Policy 2015-2020 is "to create a world-class Start-up ecosystem in the state through strategic investment and policy interventions leveraging the robust innovation climate in Bangalore"

Bangalore has about 3100 to 4900 start-ups and is the only Indian city ranked among top 20 in the Global Start-up Ecosystem Ranking 2017.

#### Highlights of Karnataka Start-up Policy 2015-2020:

**Strong Partnership between R & D Institutions and Industry:** Aims at industry academia connect and project funding. Karnataka Govt. assists in setting up of Technology Business Incubators (TBI) in institution of higher learning with well-developed research and development facilities to foster a strong link between R&D and commercialization of technologies.

**Early Stage Idea to Proof of Concept Funding:** A grant of up to Rs 50 lakhs early stage funding is provided to encourage innovators to stimulate commercialization of research discoveries and to help in validating proof of concept

**New Age Incubation Networks (NAIN):** Entrepreneurship and ability to innovate in the educational institutes is encouraged through NAIN. Under NAIN scheme 50 academic institutes are selected and assisted to set up incubators along with financial assistance of up to 3 lakhs per year for 3 year.

- Support is given to professional and post graduate colleges in tier-II and tier-III cities for setting up the incubators
- 10 student projects funded in each partner institute
- Mentor connects provided to student projects

**Creating Incubation infrastructure through PPP:** Selection of partners happens through request for proposal or industry associations. Infrastructure support, mentoring, legal & accounting services are offered to incubate and partners will help in implementing incentives and benefits to start-ups.

**Channelizing Innovation for Social Impact:** State uses vibrant innovation ecosystem to address challenges in specific areas. Each year five challenges are identified by a committee with representatives from Government, subject specialists, NGOs etc. Initial and follow up funding are given based on achievement of milestones. Pilots are implemented through departments and winners are provided incubation space on a preferential basis

**Start-up funding through funds of funds:** A fund manager is selected and the investment committee consist of experts from industry and academia. The fund focuses exclusively on start-ups.

**Providing State Support in the Form of Incentives and Concessions:** Collect reimbursement of VAT and CST for early stage start-ups, collect reimbursements on patent spends for both domestic and foreign filings, collect reimbursement on marketing expenditure up to 30% of the cost incurred subject to 5 Lakhs per start-up

annually, 10% reservation for women in seats of partner incubators, self-certification under various enactments

**Patent Reimbursement Incentive for Start-ups:** Only start-ups registered with Karnataka star-up cell are eligible. Start-up companies are subject to a limit of INR 2 lakh per Indian patent awarded. For international patents on a single subject matter, up to INR 10 lakh is reimbursed. The reimbursement is done in 2 stages, i.e., 75% after the patent is filed and the balance 25% after the patent is granted.

### 3.2 Haryana: Haryana Start-up Policy 2017

Vision envisaged for Haryana Start-up Policy 2017 is “to become a resourceful & inventive Start-up Hub of the country by supporting & assisting the new-age innovators and entrepreneurial talents across the State.”

#### **Pillars of Haryana Start-up policy 2017 are:**

**Infrastructure Augmentation:** Haryana Govt. has initiated the development of

- *Training infrastructure* such as start-up warehouse with 35 workstations for automobile, manufacturing and IT sectors.
- Development of *Mobile App Centre* that will act as a platform for armatures to interact with industry experts to mentor the innovators.
- *Centre for Innovation & Entrepreneurship (CIE)* to establish a unique public/private partnership between the government of Haryana, academic institutes & key private sector leaders.
- *Setting up Incubation Centres* to provide a common working space for innovators, testing and demonstration facility, mediation and networking with professionals and alumni associations, to establish long-term and professional relationships with higher education institutions, training and coaching on technology transfer , business support to assist the start-ups in managing their future market and business related issues are provided.

**Fund of Fund Creation:** to support start-ups, government to create a corpus of INR 200 Cr with aim to get utilized equally at two levels; firstly as seed funding for incubating the ideas and secondly financial support through venture capital funds for scalability.

- **Seed Grant:** Up to INR 3 lakhs per start-up shall be provided for validation of idea, prototype development.
- **Scale up Funding:** Government would create a corpus fund of INR 100 Cr which will be of fund of fund nature, dedicatedly to meet the funding requirement for scalability of Start-ups

**Student Entrepreneurship:** Government partnering with universities, educational institutions and the industry to provide pre-trained manpower in emerging technologies and to foster a culture of entrepreneurship. University syllabus upgrade to match the technology need and align to the requirements of Industry, introduce courses in skill training and entrepreneurship development.

**Intellectual Property (IP) Value Cell:** IP Facilitation Centre under Haryana State Council for Science and Technology shall be strengthened with an objective to raise awareness of IPR among start-ups and assist them in protection and commercialization of innovative and emerging technologies. This cell will help start-ups in understanding different types of IPRs, filing and disposal of IP applications related to patents, trademarks, etc. 50% assistance in cost of filing of patents subject to a limit of INR 10 lakhs for domestic patents awarded and INR 25 lakhs for international patents awarded.

### 3.3 Andhra Pradesh: AP Innovation and Start-up Policy 2014-2020

Vision envisaged for AP Innovation and Start-up policy 2014-2020<sup>[5][7]</sup> is “to create a world class technology start-up ecosystem by fostering entrepreneurship and a culture of innovation which contributes to increased knowledge, wealth and employment in our society.”

AP Govt. intends to produce an entrepreneur in every family through its innovation ecosystem. It aims at setting up 100 incubators and accelerators, 5000 companies and start-ups and create at least one home grown billion dollar company by fostering the culture of innovation.

The policy is based on 5 pillars:

**Shared Infrastructure:** Set up technology based incubators to promote start-up ecosystem. Develop incubation infrastructure through public private partnership. Facilitate creation of support infrastructure for development of innovation ecosystem to attract new entrepreneurs, such as common testing labs & tool rooms, enterprise software & shared hardware, shared services like legal, accounting, technology, Patents, Investment Banking.

**Accelerators/Incubators:** establish world class Accelerator/ Incubator by inviting global accelerators and Incubators to set up their programs in the state. Create 1 million square feet of Incubation Space by 2020, partnering with globally successful Incubators in order to replicate the successful Funding and Mentoring Models.

**Human Capital:** Promoting the culture of Innovation through strong educational support to bring out innovators and techno-pruners among the youth, Partnering with universities, educational institutions and industries to provide pre-trained manpower in emerging technologies. Update Syllabus to include emerging technologies and entrepreneurship development, Faculty Up gradation, innovation and transformation academy, attracting international talent, Promote and encourage participation in various national and international events by the industry, participation in the international conferences and digital marketing, Universities to introduce the concept of Gap Year - concept of Student Entrepreneur in Residence for outstanding students who wish to pursue entrepreneurship as career.

**Funding:** government will create an Innovation Fund of INR 100 crore (1 billion) for entrepreneurs and businesses. The Fund will be in the nature of Fund of Funds. It does not invest directly into start-up companies. It shall participate in the Capital of Venture Capital Funds, up to 15%. The VC Fund in turn is free to invest in start-ups located in AP, basing on its own criteria. The fund would be professionally managed like a private equity or Venture Fund with Industry leaders on the investment committee and would also leverage support from private partners and GoI.

**Good Governance:** Effective single window system to provide VAT, Labour, Municipal and other local registrations and compliances, with an objective to reduce time to set up business and reduce cost of doing business. Special dispensation for Start-ups backed by PE/VC funding would be created; the government will encourage innovation amongst the entrepreneurs through Innovation awards, Andhra Pradesh Innovation Council (APInC) to be formed with

the representatives of industry and the other stakeholders. The APInC will administer the incentives in a speedy, time-bound and transparent manner

#### **Performance linked Assistance:**

Assistance at INR 12500 per month is provided for a period of three years per incubated start-up company from the identified Incubation center.

As per AP IT Policy 2014-2020, cost of filing patents will be reimbursed to the companies having their headquarters in AP subject to a limit of INR 5 Lakh per domestic patent awarded and INR 10 Lakh per international patent awarded.

#### **4. Andhra Pradesh Innovation Ecosystem**

After the Andhra Pradesh State bifurcation in 2014, the state has highly prioritized Industrial growth, Information technology, Electronics and e-Governance as a means to promote manufacturing, create employment and build a conducive innovation ecosystem. Andhra Pradesh envisages being in the forefront of Innovation and intends to create an ecosystem that produces an entrepreneur in every family. By setting up scientific and technology ecosystem, Govt. of AP intends to empower and enable the youth of the state. Policies and Initiatives of Govt. of AP align with the dream of GOI to create a robust innovation culture and ecosystem through Science Technology and Innovation Policy.

*“Andhra Pradesh’s vision is to be amongst India’s three best states by 2022, and a developed state by 2029” - N Chandrababu Naidu, Chief Minister of Andhra Pradesh.*

##### **4.1 Andhra Pradesh Innovation Society**

Govt. of AP has set up Andhra Pradesh Innovation Society, to create policies to promote Innovation Agenda in the state and design an Innovation and Transformation Academy.

Highlights of the Innovation Society:

- Creation of Innovation Policy and Innovation Agenda
- Designing Innovation, futuristic and cost effective blueprint for the information infrastructure and systems required for the new capital of Andhra Pradesh.



- Technology innovations to foster Innovation and entrepreneurship culture in academic institutes of Andhra Pradesh.
- To develop Innovation Centers for each department/entity of the government.

Innovation competitions, workshops, boot camps and conferences are organized by AP Innovation Society to encourage disruptive ideas from students and citizens. Pressing social, environmental and technological areas are presented as challenges to identify innovative proposals from at state, national and global levels.

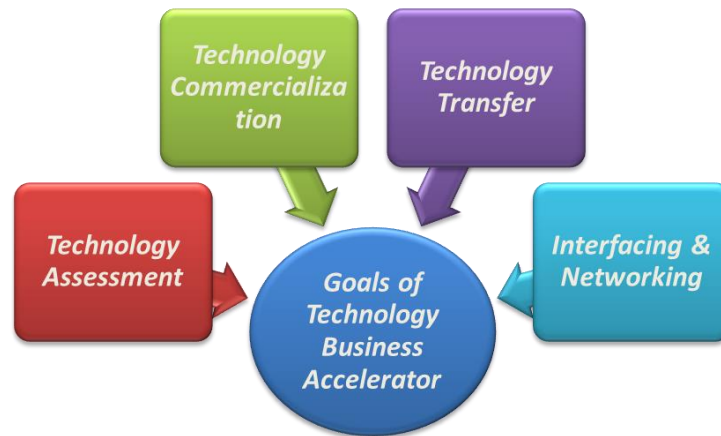
#### 4.2 Technology Business Accelerators

Government of AP has setup three world class global technology incubator accelerator facilities in the coastal city of Vishakhapatnam, Kakinada and temple town of Tirupati to promote technology start-ups, which are important tools for economic development and job creation.

Singapore based, Govin Capital supports in setting up the facility at Vishakhapatnam. Andhra Pradesh Shenzhen joint incubation centre and smart city innovation hub is set up in Kakinada which is a joint venture between Innovation Society of the Andhra Pradesh government and Qianhai Authority/ZTE Soft, a leading Chinese telecom provider. Federation of Indian Chambers of Commerce and Industry (FICCI) in co-ordination with IC2 Institute of The University of Texas at Austin has established Accelerator XLR8 Andhra Pradesh in Tirupati.

Technology based start-ups are prone to high risk and high growth. A conducive environment and support system is needed to enhance the likelihood of success of these start-ups.

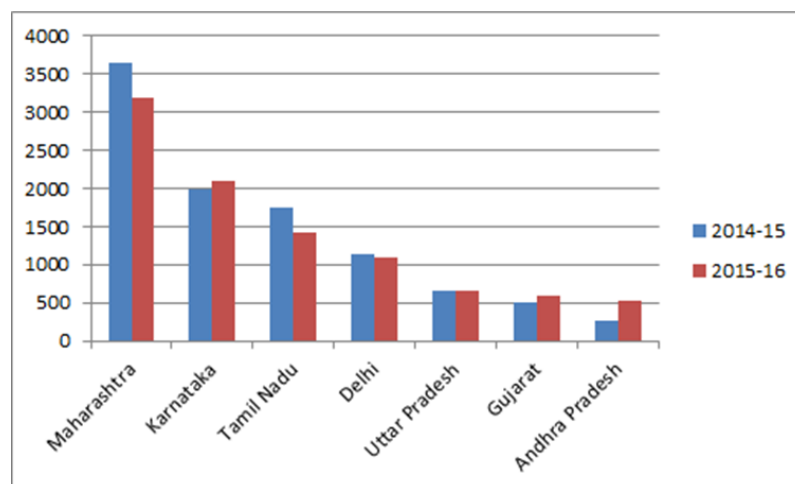
Start-ups, MSME and entrepreneurs from AP, with an annual turnover between INR 50 lakhs and INR 25 Crore from any sectors can apply with Suo Moto proposal for development of products and solutions which will be 100% funding by AP Innovation Society. Main goals of the technology business accelerator are given in Figure: 6.



**Figure: 6 Goals of Technology Business Accelerators**

## 5. Innovation Landscape of Indian States

The top five states filing highest number of IP in India are Maharashtra (3193), Karnataka (2102), Tamil Nadu (1412), Delhi (1099) and Uttar Pradesh (660), based on Figure 7. Andhra Pradesh (532) is in 7th place in terms of the number of IP applications filed.



**Figure 7: Indian States Leading in IPR Generation 2015-2016**

Types of Incubators and Accelerators
Corporate (9%)
Independent (32%)
Academic (51%)
Govt. Supported (8%)

Source NASSCOM Incubators and Accelerators reports 2017

**Figure 8: Types of Incubators and Accelerators in India - 2017**

Industries, companies, research and development centres and academic institutions are the main contributors to the intellectual property creation. The essential building block for a strong Innovation and entrepreneurial ecosystem are strong human capital and sophisticated scientific and technological infrastructures, strong spread of universities and higher educational institutions and support from the governments and industries.

India has nearly 4500 start-ups and is growing at 10-12 % Year on Year and is 3<sup>rd</sup> largest start-up base globally. There are 140+ incubators and accelerators mainly categorised as Corporate, Independent, Academic and Govt. supported. 70% of India's start-ups are concentrated in Bengaluru, NCR-Delhi and Mumbai. These states have their own Innovation and start-up missions and the cities like Bangalore, Mumbai, Delhi and Chennai emerging as start-up hubs of the country.

## 5.1 Best Practices of States Leading in IP

### 5.1.1 Strong Entrepreneurial Ecosystem

The major cities of Karnataka, Maharashtra, Delhi and Tamil Nadu are start-up leaders, harbouring more than 70% of the countries start-ups, given in Figure 9. The states are home to angel and venture cap investors. Alternate funding mechanism like bootstrapping, Crowdfunding, Peer-to-Peer lending are gaining attractiveness among these start-ups. The infrastructure is designed to offer co-working space for start-ups to work for 6-12 months with access to mentors, investors connect, customer and corporate showcase opportunity, access to shared resources and developer tools, research labs and library access, facilitate demos and organise hackathons. The incubators and accelerators focus on specific verticals (Edu-tech, Fin-tech, Health, Retail), technology (ML/AI, big data, Analytics, Cloud) and segments (B2B, B2C)

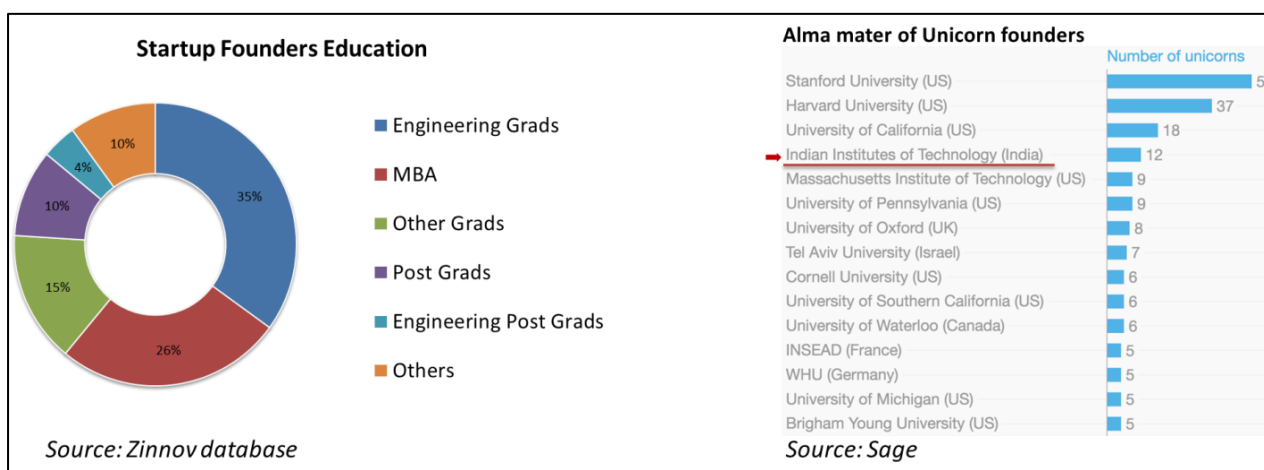
	Karnataka-Bangalore Silicon Valley of India	Delhi - NCR eCommerce Hub	Maharashtra-Mumbai Emerging Fin-tech	TamilNadu-Chennai B2B Hub
No. of Startups	1300+	1175+	800+	275+
Funding in 2016	USD 1250-1350 Mn	USD 950-1050 Mn	USD 650-750 Mn	USD 100-200 Mn
Incubators Accelerators	20-30	15-20	10-15	5-15
Technology Focus	Saas, Big Data Analytics, Health	Saas, Big Data Analytics, Supply Chain	Big Data Analytics, Machine Learning & Artificial Intelligence	Big Data Analytics, Saas

*Source: Indian Startup Ecosystem Maturing Edition 2016*

**Figure 9: Indian States Leading in No. of Incubators & Accelerators**

### 5.1.2 Research and Educational Institutions

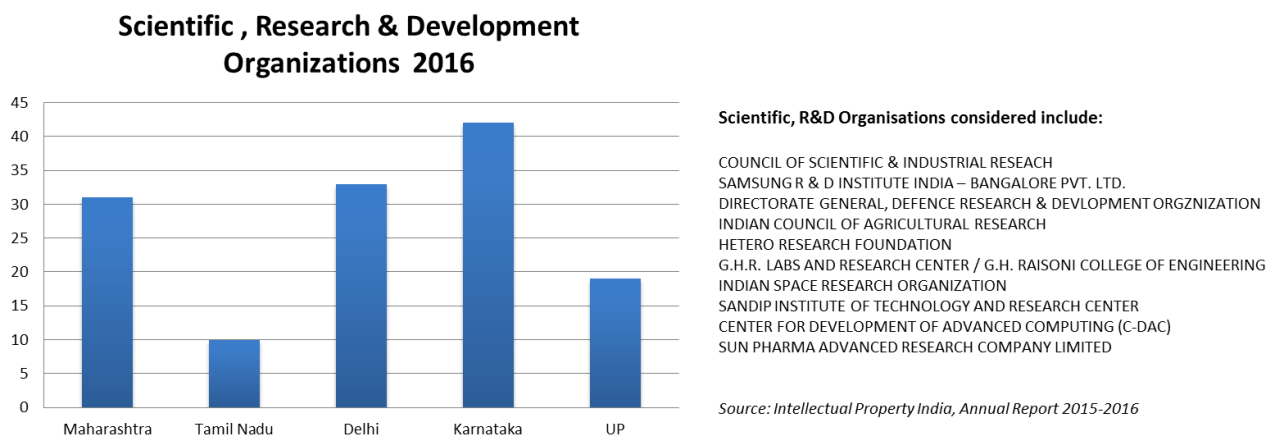
Presence of top educational institutes like IITs, IISc, IIMs, financial institutions like RBI and Stock Exchange centres play a key role in generating Intellectual Property. Highest numbers of start-up founders are engineering graduates followed by business graduates, refer Figure 1. Based on a NASSCOM report, India is the youngest start-up nation in the worlds with 72% of the founders below 35 years.



**Figure 10: Start-up Founders Education & Alma Mater of Unicorn Founders**

From the findings of an analysis by UK software firm Sage, Alma mater of IITs' in India rank 4 globally in producing Unicorn founders, Figure 10, which shows the strong performance of

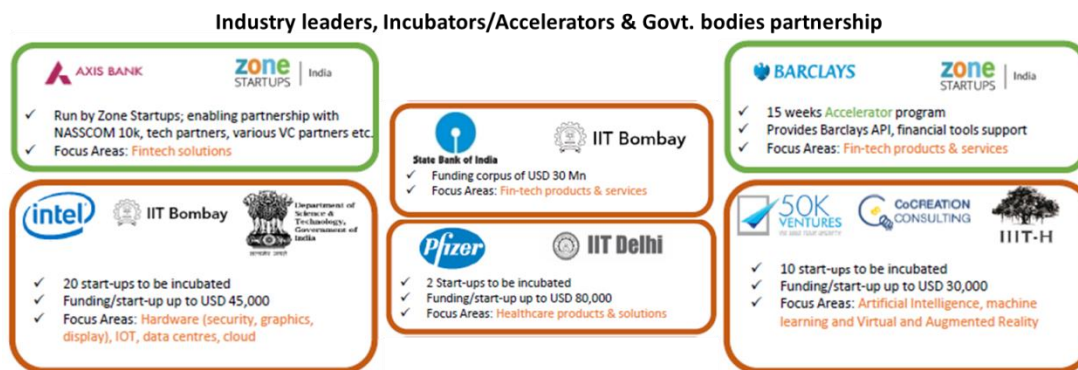
these educational institutes and a highest number of IPR applications are filed by IITs among the educational institutions. Based on Table 10, Amity University Noida, Bharath University Chennai, and IISc are followers to IIT. Karnataka (42), Delhi (34), Maharashtra (31), UP (16) and Tamil Nadu (10) are the states with highest number of Scientific, Research and Development organizations which are leaders in IP generation, refer Figure 11.



**Figure 11: Scientific Research and Development Organization 2016**

### 5.1.3 Industry Academia Start-up Partnership

Innovation ecosystem is further strengthened with the collaboration of Industry leaders, Incubators and Accelerators, Government bodies and Academic institutions. Through partnerships, industries are providing funding as well as technical expertise to the incubators and accelerators. The incubators have a pre-incubation programme to encourage innovative idea as most start-ups lack original ideas, and are of a me-too nature and tweak up the existing solutions or business models. Experimental labs for young innovators with access to innovation funds, industry linkages for idea validation are provided. A favourable environment is provided to translate knowledge and innovation into creation of successful entrepreneurs. Also, these start-ups have a strong interaction and collaborative activities such as licensing and technology transfer actions. Figure 12 shows how incubators and accelerators are partnering with Industries and Govt. bodies.



**Figure 12: Industry Leaders and Govt. Bodies Partnership**

#### 5.1.4 IP Policy Initiatives

The states forefront in IPR generation has started focusing on IPR and Innovation policies as a vital theme, in addition to the innovation infrastructure and services. The states are strengthening their IPR environment by streamlining IPR valuation, IP education, and IPR policing, protection and enforcement. Also the states are investing in establishing IP framework that are more likely to create high-value jobs, increase innovative output, attract greater FDI, as well as boost their business-friendly reputation. Incubators and Accelerators in the states provide Intellectual Property related services to the start-ups concerning to:

- Identifying patentable technologies with emphasis on technologies suitable for India
- Providing recommendation on modifying new technologies to make them patentable and commercially viable
- Providing strategic input on monetizing IP/ technology
- Providing preliminary review and feedback on the patentability of an invention in a particular jurisdiction
- Technical processing of IP inventions comprising, Prior Art Reporting, Technical Patent Drafting
- IP Strategic reports on products including Product Analysis Report on the construction, functionality and physics behind the product and Search Report for prior art in specific jurisdiction

## 6. Methodology

The study involved a pilot survey of a small sample of Start-ups and Innovators mainly drawn from the technology business accelerator XLR8 at Tirupati, Andhra Pradesh.

A questionnaire was devised for the purpose of the study, and a combination of face to face interview, distribution over online via email and telephonic interviews were performed with start-ups and innovators.

A sample of 30 Innovators has been drawn from the accelerator. It is proposed to take up a larger fragment of the Innovators for a detailed survey in future. The pilot survey questionnaire is provided in Annexures 1 of this Report.

Five expert interviews were conducted with the following group of individuals:

- Two IP patent attorneys from Bangalore based advisory firm. These interviews included a patent attorney with over 10 years expertise in SMEs, an inventor turned patent-attorney, and research scientist turned patent attorney turned patent development manager for an investment private equity company. This is group hereafter referred to as IP Patent Attorney Group 2; (Banana IP Counsels).
- Assistant Director, Global Commercialization Group, IC2 Institute Managing Director, XLR8 Andhra Pradesh Technology Business Accelerator, Mr.Glenn Robinson.
- One senior Government bureaucrat based at Chennai and responsible for the engagement with SMEs and policy settings, hereafter referred to as *Government Bureaucrat*; and
- One CEO of an incubating fund supporting high-tech spin-offs principally from university research.

## 6.1 Pilot Survey Findings

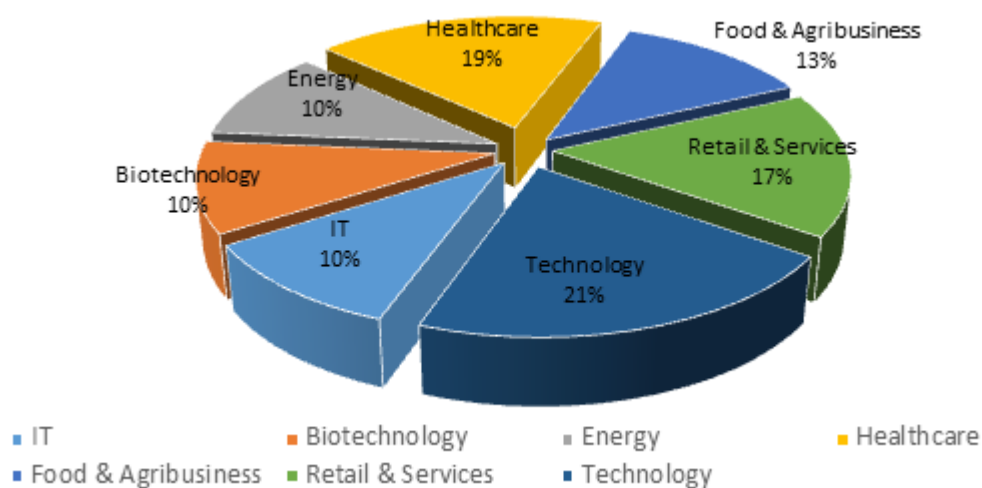
Under AP Innovation and Start-up Policy 2016-2020, Andhra Pradesh State government has set up a world-class technology business Incubation, Accelerator known as XLR8 powered by the Federation of Indian Chambers of Commerce and Industry (FICCI) & IC2 Institute of The University of Texas at Austin at the renowned temple town of Tirupati.

The primary objective of XLR8 is to foster a culture of innovation in the state of Andhra Pradesh with a primary goal to increase knowledge, wealth and employment, in the state and beyond.

In each cohort, which lasts for 4 months, 100 companies are invited online and promising 33 companies are selected for the entrepreneurship and commercialization trainings. 25 companies receive technology validations and market assessment trainings. Top 8 companies are selected to present to a bi-national panel of experts, senior executives, venture capitalists and other funding groups. Final 4 for are selected for advanced technology acceleration programs where the companies are engaged by experts to pursue and execute business engagements with interested parties.

Till date, 2 cohorts are completed successfully and 8 companies ready for successful commercialization of ideas.

Figure 13 sums up the industry break-up of the start-up and innovators (including SMEs) that figured in the pilot survey.



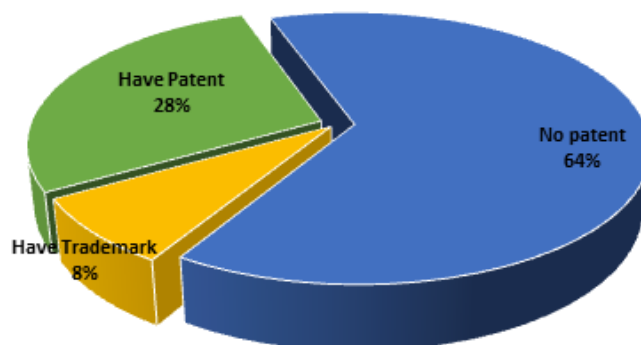
**Figure 13: Industry break-up of start-ups and innovators**

Figure 1 brings out, majority of the innovators are from Technology and Healthcare segments, followed by Services and Food Agribusiness (includes SME's). Information communication technology, Virtual Reality, Internet of Things, e-mobility and digital technologies are some



of the interesting areas in technology segment. Oil and Gas technologies, Green energy, Digital platform for agriculture and farmers, ICT based Agro-services, Agro-biogenic, Biosciences, Internet of Things based health diagnostics, Organic health supplements and Ayurvedic products are some of the interesting start-ups.

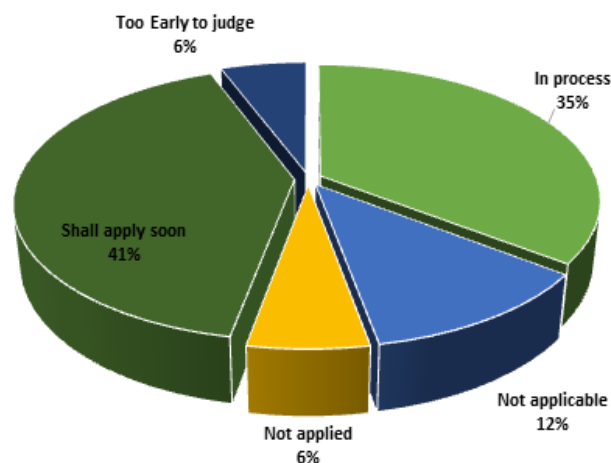
Figure 14 brings out the Intellectual Property status of the innovators and the start-ups in the pilot survey.



**Figure 14: Status of the Innovators and start-ups**

It is clearly evident from Figure that, mere 36% of the sample surveyed own an IP in the form of patents, trademarks and design rights. However, major chunks 64% of the innovators do not have IPs. The reason for low IP are detailed in the below section.

Figure 15 gives a breakup of the surveyed sample innovators not having Intellectual Property



**Figure 15: Break-up of Innovators not having IPs**

It is evident from Figure 15 that 41% of the innovators who do not own any Intellectual Property, have not applied for IP in any form and responded saying they will be applying soon for IP. 35% of the innovators who do not own IP responded saying they have filed for IP and waiting to get the grant and the rest have not applied as some of the Ideas are not original and few are in the early phases.

#### 6.1.1 Diagnosis of Low IP Performance

We requested the sample of innovators and start-ups to respond to what they think about the reasons for not filing any Intellectual Property. The responses are captured below:

**Awareness Level:** Innovators feel the current level of awareness on IP rights such as patents, trademark and designs and their commercial potential is very low. Micro small medium enterprises are unaware of need and importance of IP and its economic benefits. Based on the interviews with Innovators from SMEs, they own revolutionary innovations, but the value of IP is not appreciated enough by the SMEs and often the potential of IP opening up a plethora of opportunities for profit is underestimated. Also, SMEs fail to understand that, when the innovations are protected there is a demand from investors as well as market.

**Tedious IP Filing Process:** Based on the discussion with innovators and start-ups, the overall process for IP, from filing to grant is very tedious. Access to information, IP experts, communication with IP examiners is very challenging. Though filing of IP can be done

electronically, responses to objections raised by IP offices cannot be done electronically. Finding experts and IP attorneys to address and resolve the objections causes a lot of difficulty.

**Lack of IP Administration Process:** Many Innovators have filed application for IP and they have been waiting for years to get the IP granted. Long pending applications, inability to access information and enforcement challenges are making the IP administration very slow and ineffective. Innovators face difficulty in travelling to patent offices in case of IP obstacles, and finding and hiring an IP attorney there is strenuous.

**Scarce Accessibility to IP Experts:** Innovators get opportunity to attend basic IP trainings. Given the limited understanding and intricacy, mere trainings are not enough. Innovators need IP guidance and handholding through different stages of idea development to commercialization in order to realize the benefits of their innovations.

**Lack of Financial Support:** According to Innovators, expenses involved in filing IP is considerably high and in case of hiring an expert IP attorney or international IP protection, the IP filing cost is way too high. During the idea development stages, innovators need financial assistance, access to venture capitals and support from funding systems. Assistance in terms of IP resources, access to attorneys in drafting and filing IP are some of the expectations from the innovators.

**IP Culture and Capacity Building:** SMEs often fail to understand that registering IP can consolidate market position, provide new revenue streams through licensing, franchising or sale, increase investment funds to develop and market new products, and substantially increase negotiating power through cross licenses or joint venture agreements. IP awareness promotion is crucial to preserve IP created by SMEs & Micro-enterprises.

**Technology Transfer:** Based on the discussion with Innovators and start-ups it is observed that the incubators and accelerators currently operate in silos and there is a strong need to collaborate with academia, R&D institutes to get increased accessibility to various funding streams, investors and there by create market exposure, transfer of technology.

## 7. Study Findings

### 7.1 Inadequate State Level IPR Policy and Supporting Infrastructure

Andhra Pradesh state envisions being amongst India's three best states by 2022 and a developed state by 2019. The state intends to be the most preferred destination for investors by providing favourable business climate and infrastructure [4]. The high technology market growth is assessed to be INR 2 lakh fifty thousand crore by the end of 2020 in the areas of Industrial development, Aerospace & defence and MSMEs [1] [6] [29].

These high technologies involve a portfolio of IPR that gets transferred into industries and R&D institutes. Currently there is no state level IPR policy and supporting infrastructure that can give a fillip to state innovation and economic development.

## 7.2 Lack of Effective IP Training

1. In the emerging country like India where IP is a new concept for Start-ups and Innovators, the current level of trainings offered and the awareness programs in the AP state turns out to be ineffective to create the expected behavioural change among the citizens and entrepreneurs.
2. Though IPR education, awareness and training programs are currently being offered at few of the government-initiated incubators and accelerators, the frequency of IP training programs, are just as one of many sessions for the cohorts that are kicked-off every 3 months. These trainings are short term and cover the basic areas of IP. There is less emphasis on the practical illustrations of IP knowledge and infringements that can reduce the day to day impact.
3. Educational Institutions like schools, colleges and universities do not have any plans/initiatives for IP awareness building and education programs.

## 7.3 Need for a Strong Industry-Academia-Government Partnership

1. Accelerators and incubators ecosystem in AP state is at a very nascent stage. The state has very few Government supported accelerators, at Vishakhapatnam and Tirupati that promote technology start-ups. These start-ups mainly work on cohort-based model, conducted thrice a year. The number of corporate, independent, and academic

incubators and accelerators in the state are not many. Moreover, existing accelerators and incubators face lot of challenges with their current set up.

2. The accelerators and incubators have limited access to funding which delays the start-up journey by many months and in some cases the idea itself is dropped off due to unavailability of proper funding mechanism. Further, lack of funding has direct impact on the IPR creation which halts reaching out to investors and technology commercialization.
3. AP IT Policy 2014-2020 mentions about the reimbursement of patent filing cost subject to a limit of INR 5Lakhs for domestic patent and INR 10Lakhs for International Patent. However, awareness among startups and Innovators on the patent funding details is very limited.
4. Incubators and Accelerators connect with Industries and academia is almost zero. Start-ups have a very limited visibility and market awareness. Innovators get a narrow support on mentoring, funding, technology specialists, IPR experts and Market exploration.

## **8. Recommendations**

### 8.1 Strengthening IPR Awareness and IPR Education Programs

1. Create IP awareness among academic institutes, R&D institutes, universities and Government departments taking into account the massive potential of IPR generation at academic and R&D institutes. Expert led IPR awareness programs should be designed for the students, scientists, entrepreneurs, start-ups, MSMEs and government officials.
2. Enforce mandatory IP education as part of academic course curriculum for the schools, colleges, R&D institutes and universities. IPR awareness programs must be developed for school children on nurturing creativity and building the ability to be innovative, raising awareness against counterfeits and build respect for IPR from a young age.
  - a. Awareness programs must include Regional and National conferences on IPR, Innovation and IP Workshops, Exhibitions, White Paper contest, IP blogs for

students to share IP knowledge , IP Quizzes, IP toons to present IP and related concepts in a humorous way, social IP platforms etc.

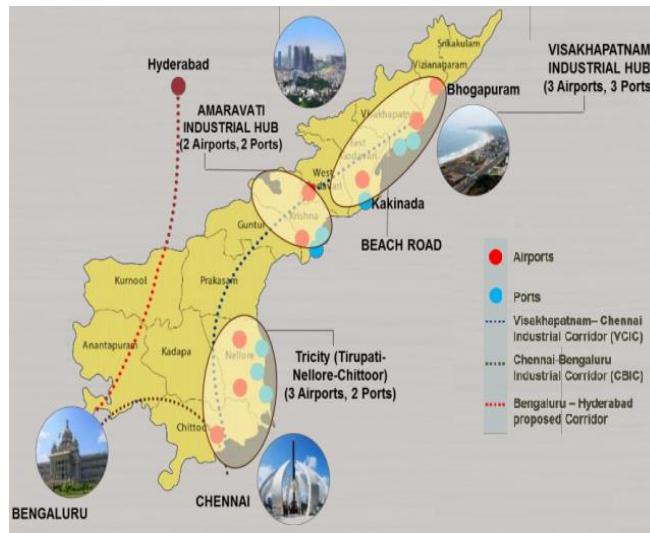
- b. Organize IP awareness week, IP road shows, Innovator interviews, technology concept models, IP projects in the schools on important days like World Intellectual Property Day, National Inventors day etc.
3. Build a strong IPR training platform to offer periodic and customized IPR training of varying duration and certification programs at incubators and accelerators, academic institutes, R&D institutes, startup hubs, MSMEs, and government offices.
  4. The IPR training should be flexible enough to allow participants to choose a trainer led classroom programs, video based online programs, pod casts and distance learning programs.
  5. IPR training programs should focus on the following
    - a. Sensitize on different IPRs like trademarks, patents, industrial designs, geographical indications and their protection.
    - b. Training on arbitration and mediation procedures under Indian IP Law, patent information search and patent drafting.
    - c. IP lifecycle management, IP rights for the rights holders and legal practitioners.
    - d. Contribution of IPR in employment, GDP, external trade and overall economic and technology growth.

## 8.2 Establishing Special IPR Cells in Industrial Corridors and Cluster Regions

Andhra Pradesh state should set up special IPR cell in the Industrial corridors and Industrial cluster regions of Andhra Pradesh. The objectives of the special IPR cell are:

- a. Educating and enabling the entrepreneurs and MSMEs to take best advantage of IP system and enable them to understand how IPRs impact success in the market place.
- b. Imparting IPR trainings and awareness programs among entrepreneurs, start-ups, Industry employees and Government officials.

c. Organizing orientation programs, hands-on trainings, workshops, conferences, outreach programs and clinics.



d. Handholding and mentoring entrepreneurs in IP filing, protection, commercialization and technology transfer.

**Figure 16: Proposed Andhra Pradesh Industrial Corridors**

8.2.1 Special IPR Cells in Industrial Corridors

Andhra Pradesh having three industrial corridors at Visakhapatnam-Chennai Industrial Corridor (VCIC), Chennai-Bengaluru Chennai Industrial Corridor (CBIC) and Petroleum, Chemicals and Petrochemicals Investment Region (PCPIR) [32] as shown in Figure 17 should focus on developing special IPR Cells in these corridors. Activities of special IPR cell could include patent prior art search services, technology trends report in the automotive areas, etc.

For example, CBIC lies in one of the major automotive industrial hubs of the country, Government of Andhra Pradesh should develop an automotive technology related special IPR cell in this region.

### 8.2.2 Sector Specific Special IPR Cells in Clusters and Industrial Parks

Andhra Pradesh has eight industrial focus sectors, as given in Figure 17, with a designated cluster and park for each of these sectors. A sector specific IPR cell should be developed in these clusters and parks taking advantage of intense sector specific knowledge, skill and the concentration of industries.





**Figure 17: Andhra Pradesh Focused Industrial Sectors**

For example, Andhra Pradesh has established a strong presence in Agro and food processing across several districts with an *Ultra Mega Food Park* proposed to be setup in Chittoor district.

In Madanapalli, Chittoor district tomato cultivation is predominant due to agro-climatic conditions and the proximity to major cities like Bangalore. During high demand period, prices of tomato go up to INR 100 per kilogram. During high production period, the prices hit the rock bottom of INR 0-10 paisa per kilogram. The wide fluctuations in the prices play havoc in the lives of the farmers. To help maintain a constant price round the year, food storage technologies and innovation should be promoted in Chittoor district, an Agro and food processing related IPR cell should be set up.

### 8.3 Strengthening Industry-Academia-Government Collaboration

1. Universities play a key role in the innovation ecosystem and in building sustainable and effective IP hubs. University Industry collaboration is critical for skill development, innovation, technology transfer, and promotion of entrepreneurship. Strengthening Industry-Academia-Government collaboration is key for new product introduction,

successful commercialization of IP and in building a sustainable innovation ecosystem.

2. Industries provide students and entrepreneurs the necessary platform to work on cutting edge technologies, in terms of knowledge, expertise, access to funds, investors and customers connect. Government should make educational policy reforms like promoting research partnerships, shared infrastructure, and IP commercialization activities etc.to further strengthen Industry-Academia collaborations as shown in Figure 18.

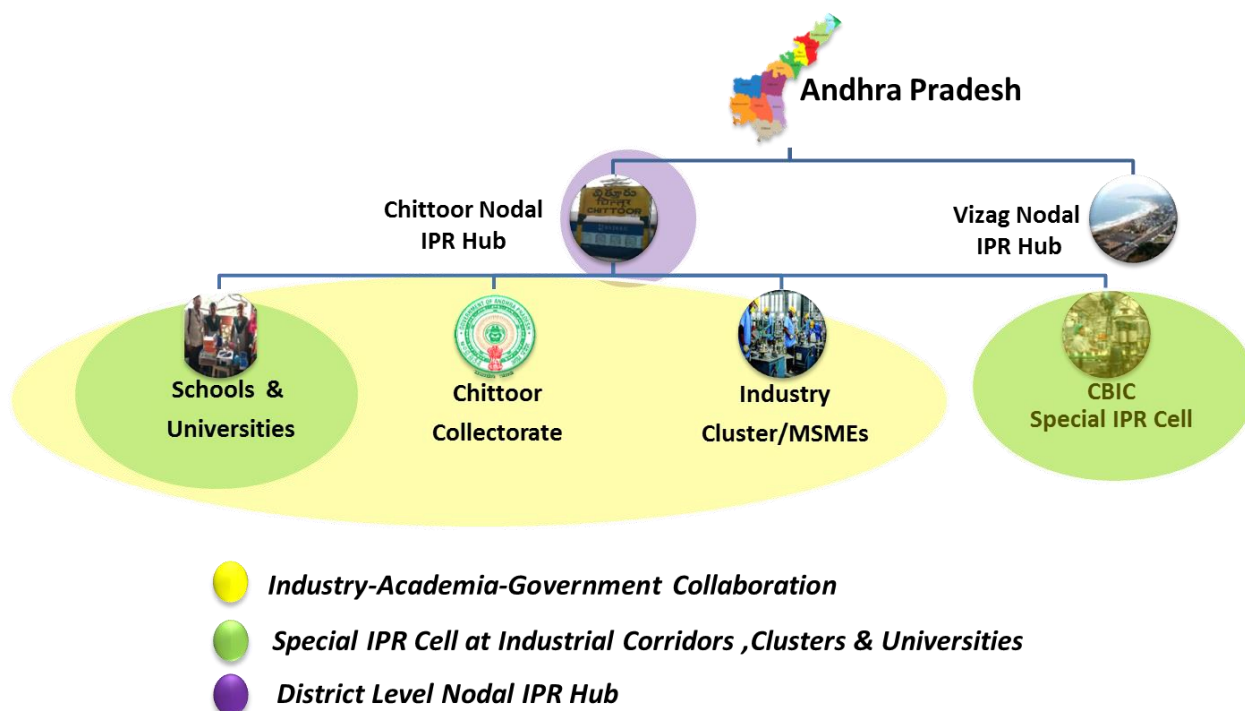
<b>Research Partnerships</b>	Inter-organizational setup for pursuing collaborative R&D, including industrial research and joint projects, Government funded projects to solve social issues
<b>Research Services</b>	Research activities commissioned to universities by industrial clients, including contract research, consulting, certification, and prototype development
<b>Shared Infrastructure</b>	Use of university labs and equipment by firms, technology business incubators, expertise, and technology parks located within universities
<b>Academic Entrepreneurship</b>	Industry-startup collaboration for faster technology transfer, Development and commercial exploitation of technologies pursued by academic inventors through spin-offs and acquisitions.
<b>Commercialization of Intellectual Property</b>	Transfer of university-generated IP to Industries via licensing
<b>Scientific publications &amp; Interactions</b>	Boot camps, Hackathons, Open Innovations, Ideation workshops, conferences, meeting and knowledge sharing

**Figure 18: Industry-Academia Collaboration Activities**

3. Some of the universities in the state can act as the special IPR cell that will be coordinating IP education and research activities, providing IP policy support to the government, acting as technology transfer office, offering IP consultation and incubating start-ups and technology spin offs.
4. Special IPR cell at the universities must initiate advanced IP education programs in the Masters and Ph.D. IP specialization/certification programs for students, corporate employees, MSMEs, start-ups and entrepreneurs should be offered. These programs will lay a foundation in building a strong IP skill base.

#### 8.4 Establishing District Level Nodal IPR Hub

Andhra Pradesh should establish district level nodal IPR hub that will be responsible for coordinating and guiding activities of special IPR cells, overseeing IPR implementation, overall IPR management activities, education & awareness building, monitoring state IPR performance and future development of IPR for the Andhra Pradesh state. High level structure for nodal IPR hub and special IPR cell are given in figure 19.



**Figure 19: Andhra Pradesh Nodal IPR Hub & Special IPR Cell Structure**

2. The Nodal IPR hub shall be leading the IPR policy reforms, connecting state IPR policy with Innovation policy and other sectoral policies. Nodal IPR hub will be responsible in identifying ways to bring together special IPR cells, academia- industry, MSMEs, start-ups and entrepreneurs to jointly implement state IPR initiatives, promote IP creation, utilization, and protection.

### 8.5 Creating a Strong IP Management Platform

IP management platform should provide services to resolve issues and challenges on IPR, access to pool of IP attorneys, experts, legal, auditing and filing, and compliance management.

IP management platform should offer one stop service to resolve IP issues right from idea incubation stage to IP generation, acquisition and utilization stages.

#### 8.5.1 IP Enforcement and Adjudication

1. Facilitate effective adjudication of IP disputes through different measures by setting up special commercial courts at appropriate level to adjudicate IP disputes.
2. Create IP modules including case laws for the benefit of judges who deal with IPR.
3. Conduct regular IP workshops and symposiums at the judicial academies.

#### 8.5.2 Building IP experts and IP Transaction Specialists

Andhra Pradesh government should focus on creating a pool of IP experts and infrastructure for patent management, commercialization and technology transfer. The IP experts support and assist innovators, start-ups, universities and educational institutes in faster commercialization and technology transfer. The IP experts can support nodal IPR hub, special IPR cells and research institutes in IPR management activities.

Create a pool of IP transaction specialists to evaluate the patent technology, its marketability and business value. Offer technology commercialization and transfer support, connecting innovators to industries and markets, develop and operate an IP transaction market and provide technology transfer consultation.

#### 8.6 Strong IP foundation for MSMEs

MSMEs, despite having very creative ideas and promising technologies, fail to generate IPRs due to lack of funding and awareness. Most commonly observed problem with MSMEs is, they fail to appreciate the importance of acquiring an IPR and decide to commercialize their innovations only to realize that their ideas get copied by competitors.

##### 8.6.1 Banking Incentives to MSMEs filing IPR

Banking incentives such as reduced interest rates, extended loan return period, ease of documentation, increased loan amount etc., should be extended to MSMEs who file an IPR. Develop MSME support programs to assist IP filing and acquisition.

#### 8.6.2 Create and Deepen MSMEs and Supplier firms linkage with Major MNCs

Linking MSMEs and MNCs are crucial to the success of market economy and particularly important in the context of investment for development [14]. Andhra Pradesh being a top investment choice for Foreign Direct Investment and leading MNCs, the government should make policy reforms to enable IP knowledge exchange between MNCs and MSMEs in the state. This would not only promote innovation and IP culture among MSMEs but also offers a platform for fair IP transactions developed by MSMEs.

For Ex: KIA Motors which is establishing its manufacturing plant in Anantapuram District, MSMEs and supplier firms from the neighboring areas should be given training on the importance of IP, enable access to KIA Motors IPR team for helping the MSMEs understand prior art search, patent filing etc.

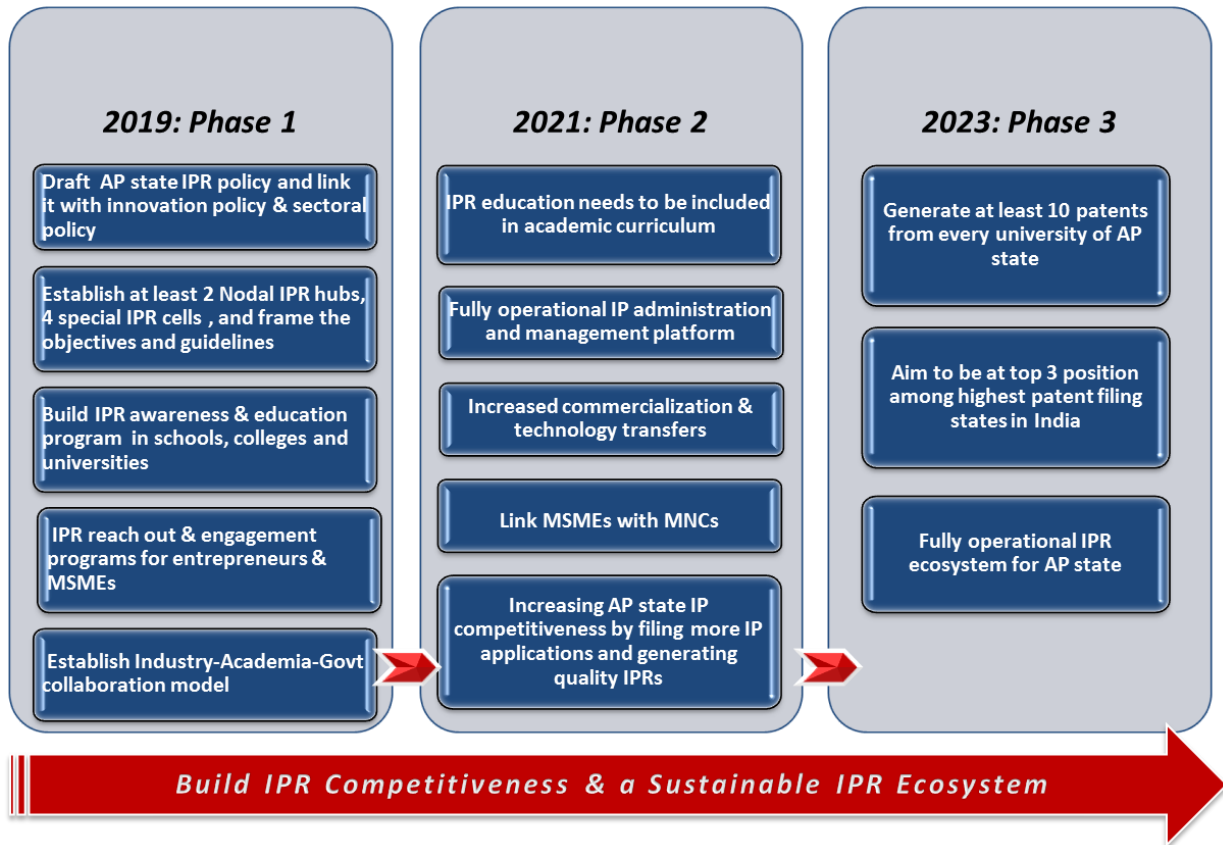
#### 8.6.3 IP Creation Support System for MSMEs

1. Special IP creation support program needs to be developed for MSMEs to build IP awareness and promote IP generation and utilization.
2. MSMEs should be assisted in transforming the ideas into patents, promoting IPR use such as GI within the agriculture, food and processing, forestry, husbandry, fishery industries, and support for expanding in the national and international markets.
3. Government initiatives and special campaigns should focus on bridging the IPR competency gap among the MSMEs in the rural areas.
4. Customized and client specific patent technology analysis needs to be offered for MSMEs to help them in directing towards a stronger R&D areas. Support for analyzing patent data, prior art research and legal assistance for MSMEs.

5. Building and promoting digital IP market place for MSMEs to showcase their IP offerings without much difficulty.
6. Setting up incubators and accelerators for MSMEs to support in different phases of idea generation, incubation and acceleration.

### 8.7 Phased Approach for Building IPR Ecosystem

A phased approach for various IPR initiatives is given in the below Figure 20Figure 2



**Figure 20: Phased IPR Approach for Andhra Pradesh**

## 9. Concluding Remarks

A detailed study of the “AP Innovation and Start-up Policy 2014-2020”, formulated under the able leadership of the Honourable Chief Minister of Andhra Pradesh is succinct and well designed. One critical factor that could provide further strength to the AP Innovation and Start-up Policy is aligning it with state Intellectual Property Rights (IPR) Policy. The initial study of AP Innovation and Start-up Policy revealed a lack of clear process and administrative procedures for claiming IPR.

A MoU (Memorandum of Understanding) was signed by the students of IIMB to conduct the study on formulating an IPR framework for the state of Andhra Pradesh. This Memorandum of Understanding is entered with the state government of Andhra Pradesh on 01st day of March, 2017. The study team comprises of Anitha Botta and Jyothi Ganiger, students of IIM Bangalore, who are being guided by Prof. A. Damodaran of IIM Bangalore and the ITE&C Department, Government of Andhra Pradesh (herein after referred to as “GoAP”), represented by Shri K. Vijayanand, IAS, Secretary ITE&C Department, Government of Andhra Pradesh for establishing the following project.

The proposed Intellectual Property Rights (IPR) framework and set of guidelines links itself with the objectives of the existing “AP Innovation and Start-up Policy 2014-2020”. It is the suggestion of the team that the AP state IPR framework should aim at realizing the following objectives:

1. Effective and efficient filing & licensing of patents, trademarks, design & copyrights to provide a fillip to start-ups.
2. Promotion of the mentioned IPRs through their commercialization.
3. The state’s IPR framework should enhance ‘*destination advantage*’ of AP state insofar as overseas and domestic investors are concerned.
4. The state IPR framework should seek transformation of knowledge economy thus improving the living standards of the people of AP state through state-of-art technological solutions and interventions that focus on health, access to energy and digital infrastructure.
5. The state IPR framework should facilitate employment generation amongst the educated youth of AP state.



The field work on the study was initiated in the month of April 2017 by the study team comprising of Anitha Botta and Jyothi Ganiger after an elaborate process of literature reviews and field survey the interim report has formulated the following conclusion. The field survey in Andhra Pradesh entitled interview with a small sample of Start-ups and incubators. This was followed by five expert interviews based in Andhra Pradesh and Karnataka. The start-up sectors that were interviewed included Information Technology, Bio-technology, Energy, Food & Agri. Business, Health care, Retail services and Technology.

- a. The world of standards on Intellectual Property Management as exemplified by the cases of China, Korea & Japan clearly indicates that proactive protection of innovations, IP awareness and commercialisation are critical to the development of Intellectual Property Rights policies.
- b. The state of Andhra Pradesh has performed very well in providing enabling infrastructure and policies for innovations and start-up infrastructure. However the findings of the field survey indicated that more could be achieved in terms of greater Patent, Trade Mark and Designs filings by start-up enterprises in Andhra Pradesh by providing help in filling IP applications, deframing expenses on the same and providing an exchange for technology transfer in the state.

## **10. Acknowledgement**

The project is in interim stage and required a lot of guidance and support from many people and we are extremely privileged to have got this all along the project. We would like to sincerely thank all the people who have assisted us in the work.

We respect and thank Sri. P S Pradyumna, IAS Joint Secretary to Chief Minister and Secretary to Government, ITE&C Department, Government of Andhra Pradesh , for providing us the opportunity to do the project work and initiating the MoU between Government of Andhra Pradesh and Indian Institute of Management Bangalore. We are extremely thankful to Sri K Vijayanand, IAS, Secretary ITE&C Department, Government of Andhra Pradesh for supporting us in the project MoU signing. We thank Sri D Venkatachalam, Joint Secretary (HR & Admin) for providing a nice support in the process of MoU signing between Government of Andhra Pradesh and Indian Institute of Management Bangalore.

We heartily thank Mr. B Kamal Nayak, Innovation Society, Government of Andhra Pradesh for his guidance and support throughout the project course and for giving so many wonderful opportunities.

We owe our deep gratitude to our project guide Prof A Damodaran, who took keen interest in our project work and guided us all along, by providing all the necessary information and guidance for developing a good work.

We heartily thank Mr. Glenn Robinson, Assistant Director, IC2 Institute Managing Director, XLR8 Andhra Pradesh Technology Business Accelerator, and Dr. Venkat Korada, Program Manager, XLR8 Andhra Pradesh for their support in helping us reach out the start-ups and innovators, and giving their valuable time for focus group interviews during the course of the project work.

We are very thankful to get constant support, guidance from Mr. S Mariappan, Senior Research Associate, Economics and Social Science, IIM Bangalore who generously contributed to the work.

Special mention goes to Pratush Puddar, KPMG for all the help and support during the project work.

Finally, but by no means least, thanks go to our family for their almost unbelievable support.

## 11. ANNEX 1: Questionnaires & Tables

**Table 1: Survey Questionnaire 1**

<b>1</b>	How many IPs are filed by the start-ups in the current Incubator/Accelerator? Patents _____ Copyright _____ Trademark _____ Design _____
<b>2</b>	What would be the worth of IPs?
<b>3</b>	If there is no IP, why firms have chosen not to protect IP?
<b>4</b>	Do you have someone specifically assigned responsibility for managing IPRs?
<b>5</b>	If yes, do you have a separate IP Dept.?
<b>6</b>	Any training in IP issues provided to the entrepreneurs?
<b>7</b>	If yes, what type of trainings?
<b>8</b>	Are the entrepreneurs motivated to obtain IPRs?
<b>9</b>	Who owns the IP generated while at the incubator? The entrepreneur alone or entrepreneur and the incubator
<b>10</b>	Do you reach out to seek advice on IPRs?
<b>11</b>	If Yes, From whom?
<b>12</b>	To what extent you would need external/expert advice when considering issues involving Intellectual Property
<b>13</b>	Does the incubator assist entrepreneur with financial assistance or technical assistance to file IPs? If so provide details
<b>14</b>	How do you think the state Government can help the start-ups & Entrepreneurs with the filing of patents or trademarks or copyrights?
<b>15</b>	What is your opinion on IP protection by MSMEs , in terms of IP awareness level, IP filing and how important it is
<b>16</b>	What should the state Govt do in order to increase the number of IP filings in the state.
<b>17</b>	Pls provide a copy of the Incubator policy and a sample copy of the MoU that the incubator signs with the entrepreneur.

**Table 2: Survey Questionnaire 2**

<b>1</b>	Is your technology or know how self-developed by you?
<b>2</b>	Are they patented?
<b>3</b>	If not, is it copyrighted?
<b>4</b>	If not, is it Design protected?
<b>5</b>	What was the cost of filing for the IPR? Rs
<b>6</b>	Do you think that filing costs have to be reduced?
<b>7</b>	Is your Trade Mark Registered?
<b>8</b>	What was the cost of filing? Rs
<b>9</b>	If there is no IP, why you have chosen not to protect IP?
<b>10</b>	If your technology is borrowed, what is the royalty fee that is paid to you as percent of annual sales?
<b>11</b>	Is the royalty fee high?
<b>12</b>	What is the license fee that you pay per annum? Rs
<b>13</b>	Is the license fee high?
<b>14</b>	Have you ever been involved in a legal dispute involving IPRs?
<b>15</b>	How do you think the state Government can help you borrow technology at moderate costs
<b>16</b>	How do you think that the State Government can help you with the filing of patents or trademarks or copyrights?
<b>17</b>	Do you feel the need to get legal support for IP protection?
<b>18</b>	If yes how can Government help?
<b>19</b>	Any other comment?

## 12. ANNEX 2: Patent Statistics

**Table 3: Last Five-Year Trend with reference to Filing IPR [23]**

Application	2011-12	2012-13	2013-14	2014-15	2015-16
<b>Patents</b>	43,197	43,674	42,951	42,763	<b>46,904</b>
<b>Design</b>	8,373	8,337	8,533	9,327	<b>11,108</b>
<b>Trade Mark</b>	1,83,588	1,94,216	2,00,005	2,10,501	<b>2,83,060</b>
<b>Geographical Indication</b>	148	24	75	47	<b>14</b>
<b>Total</b>	<b>2,35,306</b>	<b>2,46,251</b>	<b>2,51,564</b>	<b>2,62,638</b>	<b>3,41,086</b>

**Table 4: Trends in Patent Applications [23]**

Year	2011-12	2012-13	2013-14	2014-15	2015-16
<b>Filled</b>	43,197	43,674	42,951	42,763	<b>46,904</b>
<b>Examined</b>	11,031	12,268	18,615	22,631	<b>16,851</b>
<b>Granted</b>	4,381	4,126	4,227	5,978	<b>6,326</b>
<b>Disposal (granted + refused + withdrawn + abandoned)</b>	8,488	9,027	11,411	14,316	<b>21,987</b>

**Table 5: Top 5 Indian Patentees [23]**

S.No.	Name of Organization	Patents Granted
1	COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH	113
2	SAMSUNG R&D INSTITUTE INDIA-BANGALORE PRIVATE LIMITED	55
3	BHARAT HEAVY ELECTRICALS LIMITED	45
4	INDIAN INSTITUTE OF TECHNOLOGY	40
5	DEFENCE RESEARCH & DEVELOPMENT ORGANIZATION	32

**Table 6: Top 5 Foreign Residents Patentees [23]**

S.No.	Name of Patentees	Patents Granted
1	GM GLOBAL TECHNOLOGY OPERATIONS, INC	252
2	QUALCOMM INCORPORATED	212
3	LG ELECTRONICS INC.	89
4	KONINKLIJKE PHILIPS ELECTRONICS N.V	68
5	HONDA MOTOR CO.LTD.	65

**Table 7: Comparison of Revenue and Expenditure during Year 2014-15 and 2015-16**  
[23]

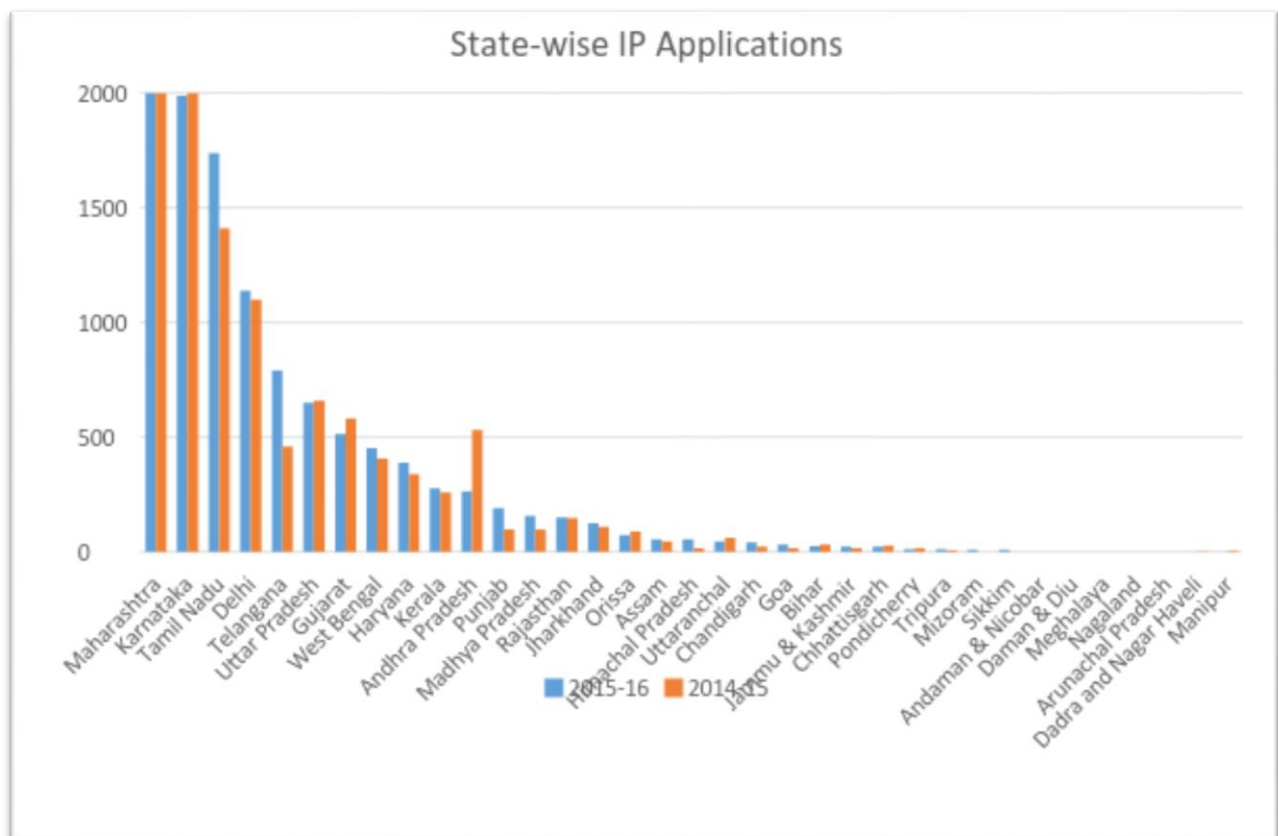
Year	2014- 2015	2015- 2016	2014-2015 (Rs Lakh)			2015-2016 (Rs. In Lakh)		
	(Rs. In Lakh)	(Rs. In Lakh)						
	Revenue		Expenditure					
			Plan	Non- Plan	Total	Plan	Non- Plan	Total
<b>Patents</b>	37400.7	39840.4	3318.1	2531.6	5849.7	3155.0	2435.6	5590.6
	9	0	0	8	8	5	2	7
<b>Designs</b>	231.50	557.72						
<b>Trade Marks</b>	13813.0	18316.0	555.20	1231.6	1786.8	706.50	1102.2	1808.7
	0	1		8	8		0	0
<b>GIR</b>	5.56	3.32	-	69.63	69.63	-	54.14	54.14
<b>PIS/RGNIIP M</b>	12.80	27.42	43.50	181.03	224.53	58.05	185.48	243.53
<b>Total</b>	<b>51463.6</b>	<b>58744.8</b>	<b>3916.8</b>	<b>4014.0</b>	<b>7930.8</b>	<b>3919.6</b>	<b>3777.4</b>	<b>7697.0</b>
	<b>5</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>4</b>

**Table 8: State-Wise Distribution of Intellectual Property Applications [23]**

State / Union Territory	2015-16	2014-15
Andaman & Nicobar	1	0
Andhra Pradesh	265	532
Arunachal Pradesh	0	1
Assam	55	46
Bihar	25	31
Chandigarh	41	24
Chhattisgarh	22	28
Dadra and Nagar Haveli	0	2
Daman & Diu	1	0
Delhi	1139	1099
Goa	32	16
Gujarat	514	583
Haryana	389	339
Himachal Pradesh	55	16
Jammu & Kashmir	23	17
Jharkhand	126	109
Karnataka	1989	2102
Kerala	277	259
Madhya Pradesh	158	98
Maharashtra	3654	3193
Manipur	0	5
Meghalaya	1	0
Mizoram	9	0
Nagaland	1	0
Orissa	73	88
Pondicherry	12	16
Punjab	191	97
Rajasthan	150	147
Sikkim	9	1
Tamil Nadu	1739	1412



Telangana	790	459
Tripura	12	8
Uttar Pradesh	651	660
Uttaranchal	45	61
West Bengal	452	406
<b>Grand Total</b>	<b>12901</b>	<b>11855</b>



**Figure 21: State-wise IP Applications [23]**

**Table 9: Subject Wise Distribution of Examiners of Patents [23]**

<b>Sl. No.</b>	<b>Subject</b>	<b>No. Examiners</b>
1	Biochemistry	5
2	Biotechnology	7
3	Biomedical Engineering	8
4	Chemistry	28
5	Civil Engineering	1
6	Computer & IT Engineering	17
7	Electrical & Electronics	32
8	Mechanical	16
9	Metallurgical	7
10	Physics	2
11	Polymer	4
12	Textile	5
	<b>Total</b>	<b>132</b>

**Table 10: Top Indian Applicants for Patents in the Field of Information Technology [23]**

<b>Sl. No.</b>	<b>Name of Companies</b>	<b>Application Filed</b>
1	SAMSUNG R & D INSTITUTE INDIA	229
2	TATA CONSULTANCY SERVICES LIMITED	213
3	WIPRO LIMITED	149
4	INDIAN INSTITUTE OF TECHNOLOGY	60
5	HCL TECHNOLOGIES LIMITED	49

**Table 11: Top Patent Applicants from Scientific and Research & Development Organizations [23]**

<b>S. No</b>	<b>Name of Scientific and Research &amp; Development Organizations</b>	<b>Application Filed</b>
1	COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEACH	323
2	SAMSUNG R & D INSTITUTE INDIA – BANGALORE PVT. LTD.	271
3	DIRECTORATE GENERAL, DEFENCE RESEARCH & DEVLOPMENT ORGZNIZATION	85
4	INDIAN COUNCIL OF AGRICULTURAL RESEARCH	63
5	HETERO RESEARCH FOUNDATION	40
6	G.H.R. LABS AND RESEARCH CENTER / G.H. RAISONI COLLEGE OF ENGINEERING	33
7	INDIAN SPACE RESEARCH ORGANIZATION	25
8	SANDIP INSTITUTE OF TECHNOLOGY AND RESEARCH CENTER	21
9	CENTER FOR DEVELOPMENT OF ADVANCED COMPUTING (C-DAC)	20
10	SUN PHARMA ADVANCED RESEARCH COMPANY LIMITED	19

**Table 12: Top 10 Institutes / Universities Applicants [23]**

<b>S. No</b>	<b>Name of Institutes / Universities</b>	<b>Application Filed</b>
1	INDIAN INSTITUTE OF TECHNOLOGY	391
2	AMITY UNIVERSITY	99
3	BHARATH UNIVERSITY	65
4	INDIAN INSTITUTE OF SCIENCE	46
4	CHITKARA UNIVERSITY	46
5	SAVEETHA SCHOOL OF ENGINEERING, SAVEETHA UNIVERSITY	33
5	G.H. RAISONY COLLEGE OF ENGINEERING / G.H.R. LABS AND RESEARCH CENTER	33
6	SHOOLINI UNIVERISTY OF BIOTECHNOLOGY AND MANAGEMENT SCIENCES	22
6	JANARDAN RAI NAGAR RAJASTHAN VIDYAPEETH (DEEMED)	22
7	VELTECH DR. RR & DR. SR TECHNICAL UNIVERSITY	20
8	SIDDAGANGA INSTITUTE OF TECHNOLOGY AND INSTITUTE OF SREE SIDDAGANGA EDUCATION SOCIETY	17
9	NATIONAL INSTITUTE OF PHARMACEUTICAL EDUCATION AND RESERCH (NIPER)	15
9	DR. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE	15
10	KING GEORGE'S MEDICAL UNIVERSITY	14

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