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# **Cyber Security Strategy for India**

**May 2019**

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## SKOCH Cyber Patriots Task Force

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## Version 1.1

This version takes into account inputs received during the two Task Force meetings, i.e., Delhi and Bangalore, inputs received by mail from members Mr Raman Krishnamoorthy, VP-IT, Bata India Ltd; Dr C Muralikrishnakumar, Senior Adviser, Niti Aayog; Mr Manoranjan Kumar, CIO, Shree Cement Ltd; my in-depth reading of the book *'Secure and Smart Internet of Things (IoT): Using Blockchain and AI'* authored by Prof Ahmed Banafa, San Jose State University, USA, my e-mail discussions with him; and, my meetings at RBI and NCSC.

# SKOCH Cyber Patriots Task Force

Updated Structure as on 17<sup>th</sup> May 2019:

			Group	Author	Co-Author(s)
<b>Part I</b>	<b>Making a Case for this Report</b>				
<b>A</b>	<b>Planning Context</b>				
	1	The Indian Economy	Policy	Mr Akhilesh Tuteja, KPMG	
	2	Digitisation Extent and Impact	Policy	Mr Akhilesh Tuteja, KPMG	
	3	Challenges and Impact of Possible Disruptions on:			
	a	Economy	Policy	Mr Akhilesh Tuteja, KPMG	
	b	Banking	BFSI	Open	
	c	Payments	BFSI	Open	
	d	Financial Services	BFSI	Mr Shiv Kumar, BSE	
	e	Insurance	BFSI	Open	
	f	Government	Policy	Open	
	g	Manufacturing	OT	Open	
	h	Services	Services	Open	
	i	Defence	Policy	Open	
	j	Homeland Security	Policy	Mr Brijesh Kumar, Maharashtra Police	Mr Akash Kundu, CBI Academy
<b>B</b>	<b>Background and Evolution</b>				
	1	Evolution of Cyber Threats	Policy	Mr Sivarama Krishnan, PwC	
	2	Status of Cyber Security in India	Policy	Mr Sivarama Krishnan, PwC	
	a	Asset Review	Policy	Mr Sivarama Krishnan, PwC	
	b	Institutional Mechanisms	Policy	Mr Sivarama Krishnan, PwC	
	c	Gaps	Policy	Mr Sivarama Krishnan, PwC	
	d	Existing Cyber Security Frameworks & Policies	Policy	Mr Sivarama Krishnan, PwC	
	i	Banking	BFSI	Mr Sivarama Krishnan, PwC	
	ii	Payments	BFSI	Mr Sivarama Krishnan, PwC	
	iii	Financial Services	BFSI	Mr Sivarama Krishnan, PwC	
	iv	Insurance	BFSI	Mr Sivarama Krishnan, PwC	
	v	Government	Policy	Prof Anjali Kaushik, MDI	
	vi	Manufacturing	OT	Mr Gautam Kapoor, Deloitte	
	vii	Services	Services	Mr Debashish Singh, Mphasis	
	viii	Defence	Policy	Open	
	ix	Homeland Security	Policy	Mr Brijesh Kumar, Maharashtra Police	Mr Akash Kundu, CBI Academy
	3	State of Implementation			
	a	Any Major Breakthrough in the Recent Past	Policy	Mr Sivarama Krishnan, PwC	
	b	Inter-Country Comparisons	Policy	Mr Sivarama Krishnan, PwC	

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<b>C</b>		<b>Cyber Security as a Governance Problem</b>		
	1	Protecting my Relationships with my Customer	Policy	Dr Anupam Saraph, Symbiosis Institute
	2	Chain of Linkages Between Me and My Customer	Policy	Dr Anupam Saraph, Symbiosis Institute
	3	Why One Solution Does Not Fit All?	Policy	Dr Anupam Saraph, Symbiosis Institute
	4	Are CISOs being Disempowered?	Policy	Dr Anupam Saraph, Symbiosis Institute
	5	Embedded Business Time-Bombs or Proprietary Standards or Monopolies	Policy	Dr Anupam Saraph, Symbiosis Institute
	6	Is Industry Peddling Snake Oil?	Policy	Mr Sameer Kochhar, SKOCH
		<i>Sectoral Examples to be Provided in this Section Where</i>	All Groups	
<b>D</b>		<b>Conclusions</b>		
<b>Part II</b>		<b>Threat or Perception</b>		
<b>A</b>		<b>Emergent Technical Scenario</b>		
	1	5G	All Groups	Dr Gulshal Rai, SKOCH Foundation
	2	Artificial Intelligence	All Groups	Open
	3	Cognitive Technologies	All Groups	Open
	4	Blockchain	All Groups	Open
	5	Internet of Things (IoT)	All Groups	Open
	6	Internet of Industrial Things (IIoT)	All Groups	Open
	7	Machine to Machine (M2M)	All Groups	Open
	8	Machine Learning	All Groups	Open
	9	Fog Computing	All Groups	Open
	10	Evolution from Cloud to Hybrid Computing	All Groups	Open
	11	Smart Contracts	All Groups	Open
		<i>Sectoral Examples to be Provided in this Section Wherever Applicable / Available</i>		
<b>B</b>		<b>Threat Matrix for India</b>		
	1	Overall	Policy	Lt Gen Rajesh Pant, NCSC
	2	Homeland Security	Policy	Lt Gen Rajesh Pant, NCSC
	3	Defence	Policy	Lt Gen Rajesh Pant, NCSC
	4	Technologies	Policy	Lt Gen Rajesh Pant, NCSC
<b>C</b>		<b>Building Resilience as Pre-emptive</b>		
	1	Protecting Against Innovations and Emerging Technologies	All Groups	
	2	Legal Framework	Policy	Ms Pratibha Jain, Nishith Desai Associates
	3	India's Readiness	Policy	Mr S S Sarma, CERT-In
<b>D</b>		<b>Conclusions</b>		

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<b>Part III</b>		<b>Protecting Against a Cyber War</b>			
	1	Detection and Response	Open	Open	
	2	Surveillance in Networked Systems	Open	Open	
	3	Cyber Deterrence	Open	Open	
	4	Vulnerability Management	Open	Open	
	5	Regulatory Framework	Open	Open	
	6	Doctrine of Prevention	Open	Open	
	7	Cyber Offensive Capability	Open	Open	
	8	Doctrine of Risk Management	Open	Open	
	9	Accountability	Open	Open	
	10	Conclusions	Open	Open	
<b>Part IV</b>		<b>Proposed Framework</b>			
	1	Institutional Framework:			
	a	National	Policy	Open	
	b	State	Policy	Open	
	c	Banking	BFSI	Open	
	d	Payments	BFSI	Open	
	e	Financial Services	BFSI	Open	
	f	Insurance	BFSI	Open	
	g	Government	Policy	Open	
	h	Manufacturing	OT	Open	
	i	Services	Services	Open	
	j	Defence	Policy	Open	
	k	Homeland Security	Policy	Open	
	2	Critical Information Infrastructure			
	a	National	Policy	Open	
	b	State	Policy	Open	
	c	Banking	BFSI	Open	
	d	Payments	BFSI	Open	
	e	Financial Services	BFSI	Open	
	f	Insurance	BFSI	Open	
	g	Government	Policy	Open	
	h	Manufacturing	Policy	Open	
	i	Services	Policy	Open	
	j	Defence	Policy	Open	
	k	Homeland Security	Policy	Open	
	3	Constitutional Framework			
	a	Protecting Fundamental Rights	Policy	Open	
	b	Right to Privacy	Policy	Open	
	c	List	Policy	Open	
	d	Role of Local Bodies	Policy	Open	

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	4	Legal Framework		
	a	E-Commerce Legislation	Policy	Open
	b	Data Protection Legislation	Policy	Open
	c	Privacy Legislation	Policy	Open
	d	Identity Legislation	Policy	Dr Anupam Saraph, Symbiosis Institute
	5	Capacity Building Framework	Policy	Dr C Muralikrishnakumar, Niti Aayog
	6	Standards Framework	Policy	Dr Deepak Phatak, SKOCH Foundation
	7	Conclusions		
<b>Part V</b>	<b>Contours of Cyber Security Doctrine</b>			
	1	Policy	Policy	Open
	a	National	Policy	Open
	b	State	Policy	Open
	c	Corporate	All Groups	Open
	d	Individual	All Groups	Open
	2	Technology		
	a	Keeping Ahead of the Curve	All Groups	Open
	b	5G	All Groups	Dr Gulshan Rai, SKOCH Foundation
	c	Artificial Intelligence	All Groups	Open
	d	Cognitive Technologies	All Groups	Open
	e	Blockchain	All Groups	Open
	f	Internet of Things (IoT)	All Groups	Open
	g	Internet of Industrial Things (IIoT)	All Groups	Open
	h	Machine to Machine (M2M)	All Groups	Open
	i	Machine Learning	All Groups	Open
	j	Fog Computing	All Groups	Open
	k	Computing	All Groups	Open
	l	Smart Contracts	All Groups	Open
	3	Negotiations	Policy	Open
	4	Coordination Structure for Cyber and Information Warfare	Policy	Open
	5	Patching vs Isolation	Policy	Open
	6	AI and Cognitive Learning Based Automatic Response Systems	All Groups	Open
	7	Conclusions		