Q1 What is your organization's primary line of business?
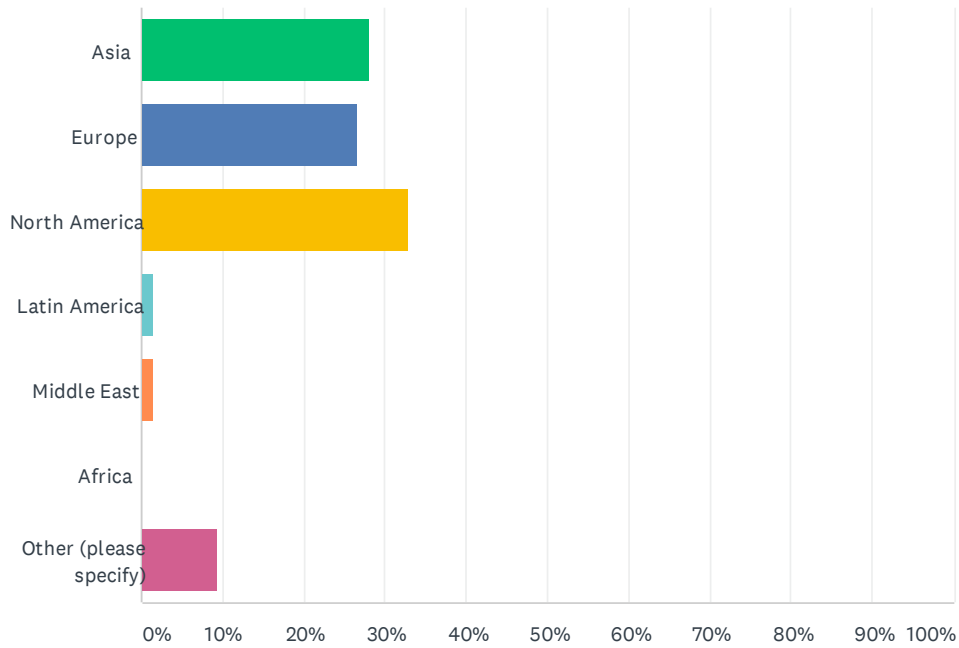
Answered: 64 Skipped: 1
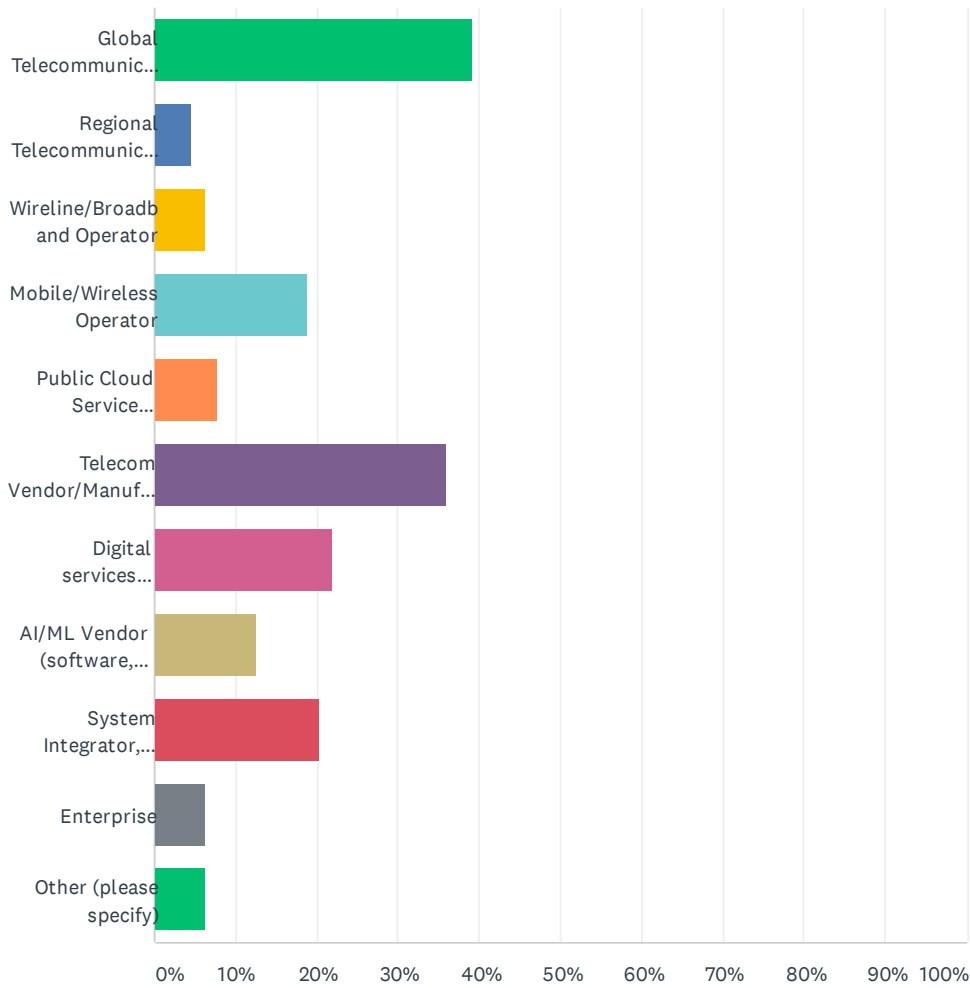
ANSWER CHOICES	RESPONSES	
Global Telecommunications Carrier	39.06%	25
Regional Telecommunications Carrier	4.69%	3
Wireline/Broadband Operator	6.25%	4
Mobile/Wireless Operator	18.75%	12
Public Cloud Service Provider	7.81%	5
Telecom Vendor/Manufacturer (Hardware, software, peripherals)	35.94%	23
Digital services provider (IoT, smart cities, AI/ML, etc.)	21.88%	14
AI/ML Vendor (software, services)	12.50%	8
System Integrator, consulting, testing services	20.31%	13
Enterprise	6.25%	4
Other (please specify)	6.25%	4
Total Respondents: 64		

Q2 Where your organization is primarily based:

Answered: 64   Skipped: 1

ANSWER CHOICES	RESPONSES	
Asia	28.13%	18
Europe	26.56%	17
North America	32.81%	21
Latin America	1.56%	1
Middle East	1.56%	1
Africa	0.00%	0
Other (please specify)	9.38%	6
TOTAL		64

Q3 What is your company's average annual revenue?

Answered: 64   Skipped: 1
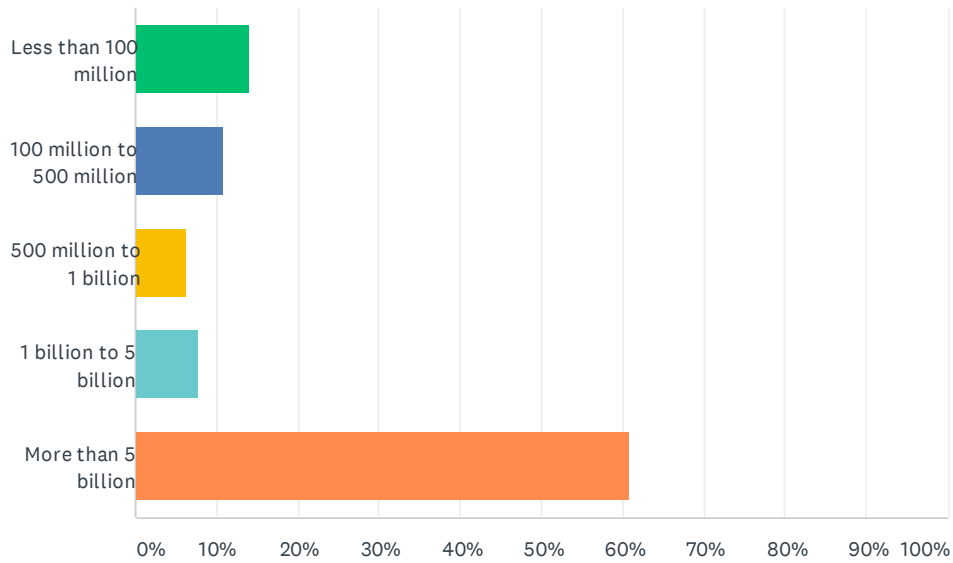
ANSWER CHOICES	RESPONSES	
Less than 100 million	14.06%	9
100 million to 500 million	10.94%	7
500 million to 1 billion	6.25%	4
1 billion to 5 billion	7.81%	5
More than 5 billion	60.94%	39
TOTAL		64

Q4 What is your primary job function?

Answered: 64   Skipped: 1
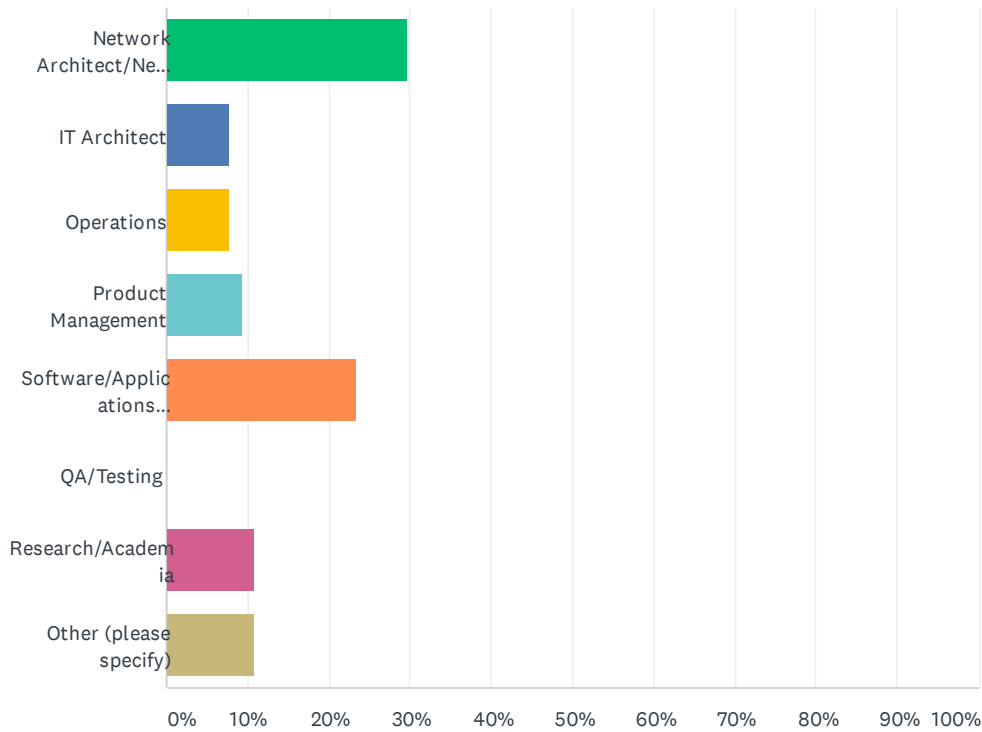
ANSWER CHOICES	RESPONSES	
Network Architect/Network Systems	29.69%	19
IT Architect	7.81%	5
Operations	7.81%	5
Product Management	9.38%	6
Software/Applications Development/Programming	23.44%	15
QA/Testing	0.00%	0
Research/Academia	10.94%	7
Other (please specify)	10.94%	7
TOTAL		64

Q5 What are your top business drivers for adding intelligent networking capabilities to your networks? Please check all that apply:

Answered: 53   Skipped: 12
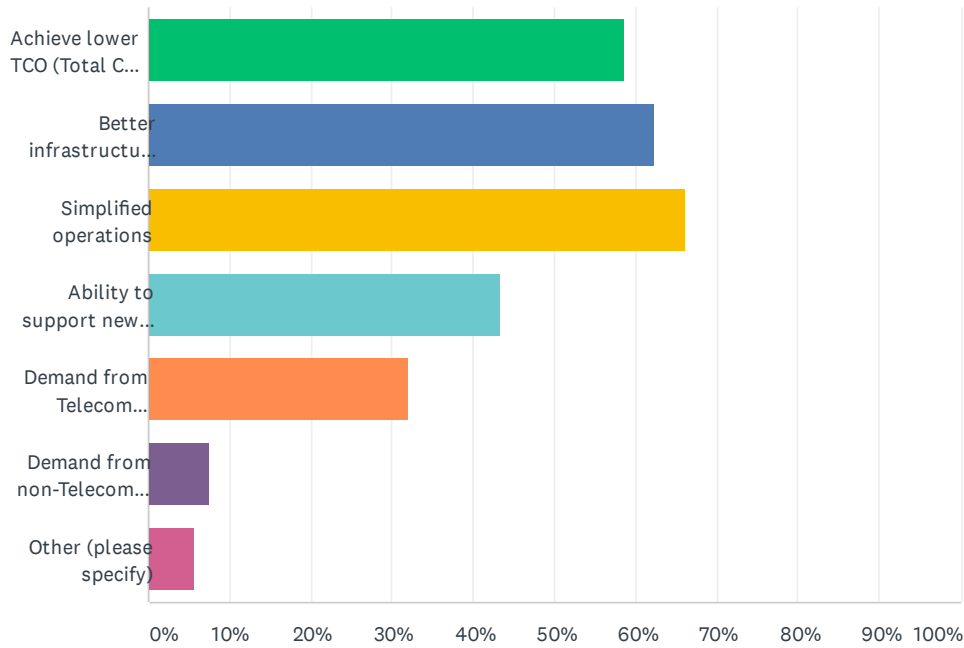
ANSWER CHOICES	RESPONSES	
Achieve lower TCO (Total Cost of Ownership) and increase efficiency	58.49%	31
Better infrastructure network performance	62.26%	33
Simplified operations	66.04%	35
Ability to support new customer facing products	43.40%	23
Demand from Telecom customers	32.08%	17
Demand from non-Telecom customers	7.55%	4
Other (please specify)	5.66%	3
Total Respondents: 53		

Q6 Please indicate where your company is on the journey to Intelligent networking?

Answered: 53   Skipped: 12
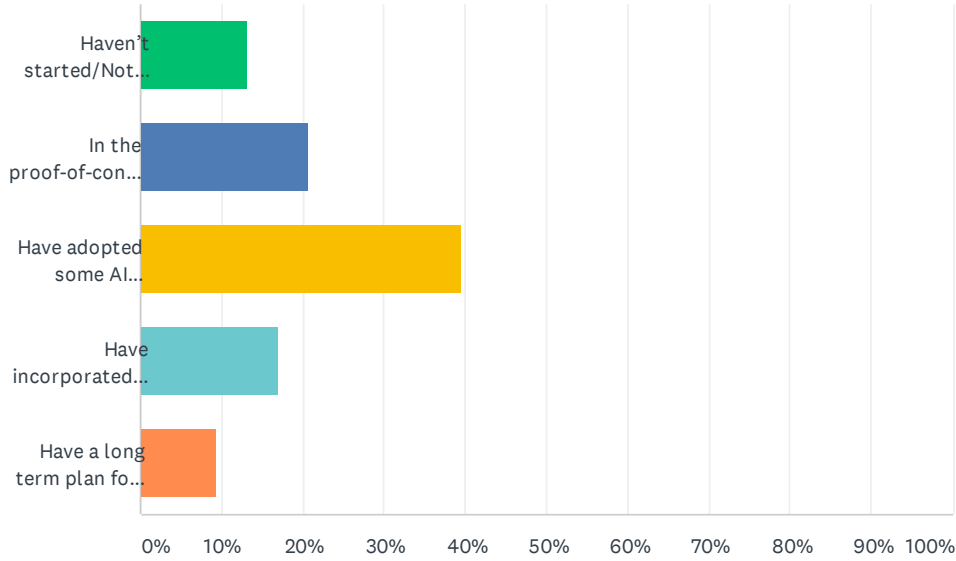
ANSWER CHOICES	RESPONSES	
Haven't started/Not ready	13.21%	7
In the proof-of-concept phase	20.75%	11
Have adopted some AI technology in our network or product	39.62%	21
Have incorporated AI technology in our network or products extensively	16.98%	9
Have a long term plan for scale adoption into our infrastructure or product portfolio	9.43%	5
TOTAL		53

Q7 What is your timeline for implementation into production?

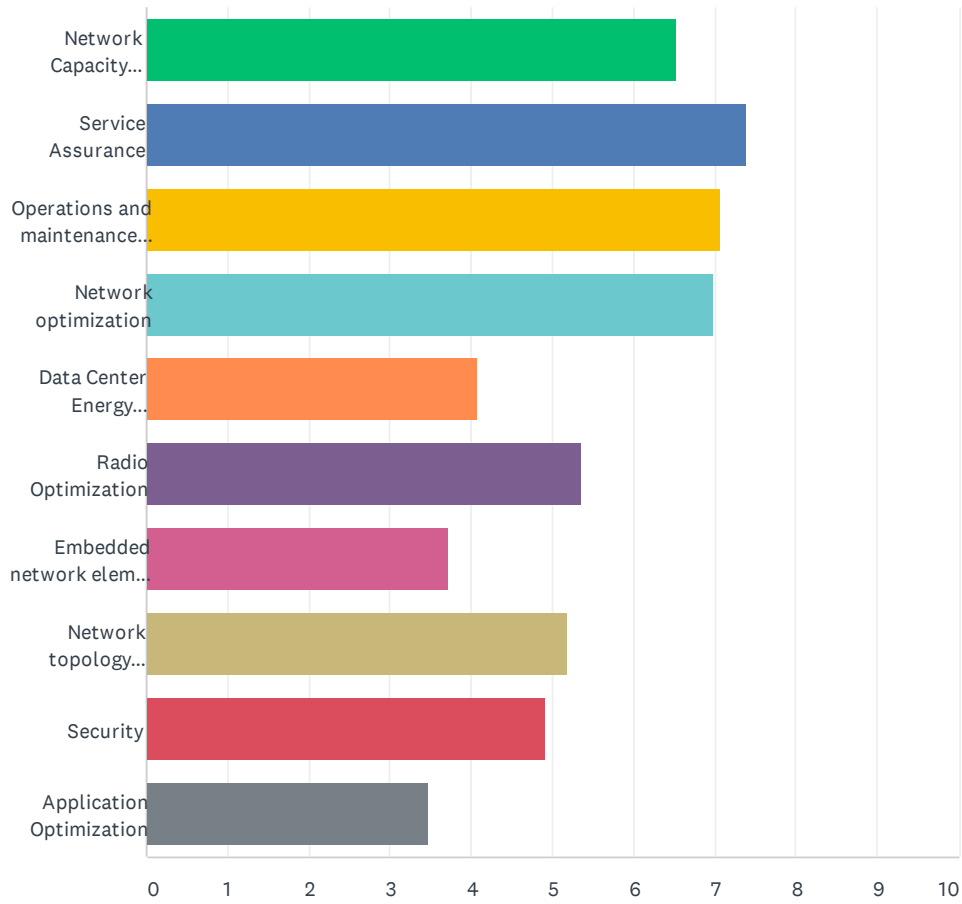Answered: 53   Skipped: 12
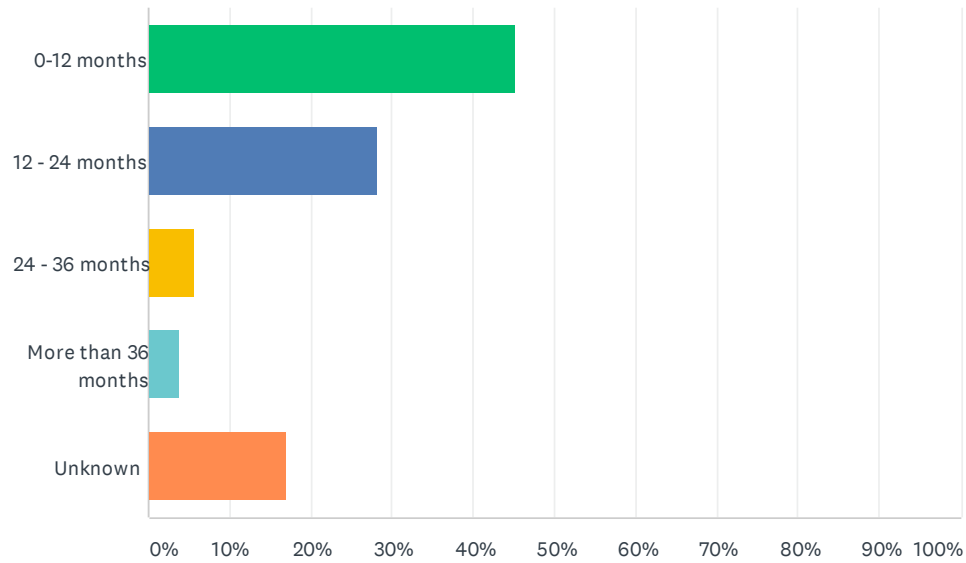
ANSWER CHOICES	RESPONSES	
0-12 months	45.28%	24
12 - 24 months	28.30%	15
24 - 36 months	5.66%	3
More than 36 months	3.77%	2
Unknown	16.98%	9
TOTAL		53

Q8 Which of the following application scenarios are you interested in applying AI technology? (rank items in priority order, highest priority first)

Answered: 47   Skipped: 18

|	1	2	3	4	5	6	7	8	9	10	TOTAL	SCO
Network Capacity Planning	22.73% 10	13.64% 6	9.09% 4	4.55% 2	13.64% 6	4.55% 2	15.91% 7	4.55% 2	4.55% 2	6.82% 3	44	6
Service Assurance	25.00% 11	13.64% 6	22.73% 10	6.82% 3	6.82% 3	11.36% 5	4.55% 2	4.55% 2	2.27% 1	2.27% 1	44	7
Operations and maintenance (quality control and stability)	20.00% 9	13.33% 6	15.56% 7	11.11% 5	13.33% 6	11.11% 5	6.67% 3	4.44% 2	4.44% 2	0.00% 0	45	7
Network optimization	4.26% 2	21.28% 10	14.89% 7	21.28% 10	21.28% 10	6.38% 3	8.51% 4	0.00% 0	0.00% 0	2.13% 1	47	6
Data Center Energy Efficiency	2.33% 1	2.33% 1	0.00% 0	13.95% 6	13.95% 6	4.65% 2	13.95% 6	23.26% 10	6.98% 3	18.60% 8	43	4
Radio Optimization	4.65% 2	13.95% 6	9.30% 4	11.63% 5	4.65% 2	16.28% 7	9.30% 4	6.98% 3	16.28% 7	6.98% 3	43	5
Embedded network element autonomy	4.44% 2	4.44% 2	0.00% 0	0.00% 0	6.67% 3	13.33% 6	20.00% 9	15.56% 7	20.00% 9	15.56% 7	45	3
Network topology optimization including traffic , SLA , PoP migration	4.55% 2	4.55% 2	13.64% 6	13.64% 6	4.55% 2	13.64% 6	11.36% 5	20.45% 9	11.36% 5	2.27% 1	44	5
Security	6.98% 3	9.30% 4	6.98% 3	6.98% 3	9.30% 4	11.63% 5	6.98% 3	16.28% 7	16.28% 7	9.30% 4	43	4
Application Optimization	4.65% 2	2.33% 1	6.98% 3	6.98% 3	4.65% 2	9.30% 4	2.33% 1	4.65% 2	18.60% 8	39.53% 17	43	3

Q9 If the application scenario of interest was not listed above, please list any application scenarios for intelligent network technologies of interest:

Answered: 5   Skipped: 60

ANSWER CHOICES	RESPONSES	
Priority 1:	100.00%	5
Priority 2:	60.00%	3
Priority 3:	60.00%	3
Others:	40.00%	2

Q10 If intelligent network application certification services will be used to evaluate the effects of intelligent applications, the objects of evaluation and certification should include:

Answered: 42   Skipped: 23
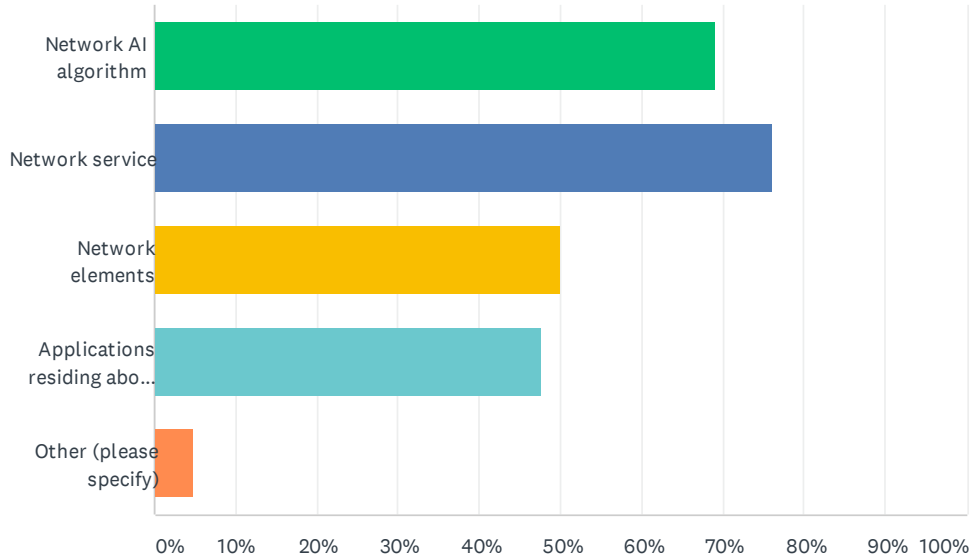
ANSWER CHOICES	RESPONSES	
Network AI algorithm	69.05%	29
Network service	76.19%	32
Network elements	50.00%	21
Applications residing above the network layer	47.62%	20
Other (please specify)	4.76%	2
Total Respondents: 42		

Q11 What standards organizations does your organization currently participate in for standardizing intelligent network?

Answered: 43   Skipped: 22
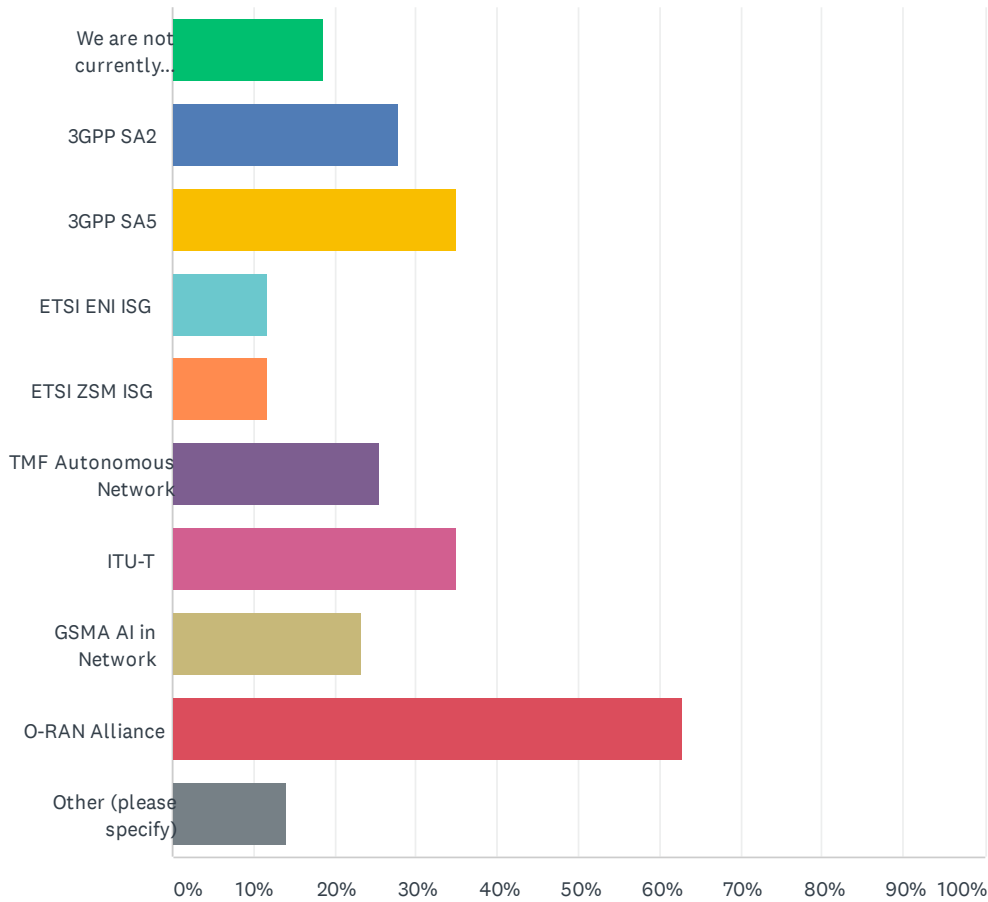
ANSWER CHOICES	RESPONSES	
We are not currently participating in any standards bodies for intelligent networks	18.60%	8
3GPP SA2	27.91%	12
3GPP SA5	34.88%	15
ETSI ENI ISG	11.63%	5
ETSI ZSM ISG	11.63%	5
TMF Autonomous Network	25.58%	11
ITU-T	34.88%	15
GSMA AI in Network	23.26%	10
O-RAN Alliance	62.79%	27
Other (please specify)	13.95%	6
Total Respondents: 43		

Q12 What open source organizations does your organization currently participate in for implementing intelligent networks?

Answered: 44   Skipped: 21
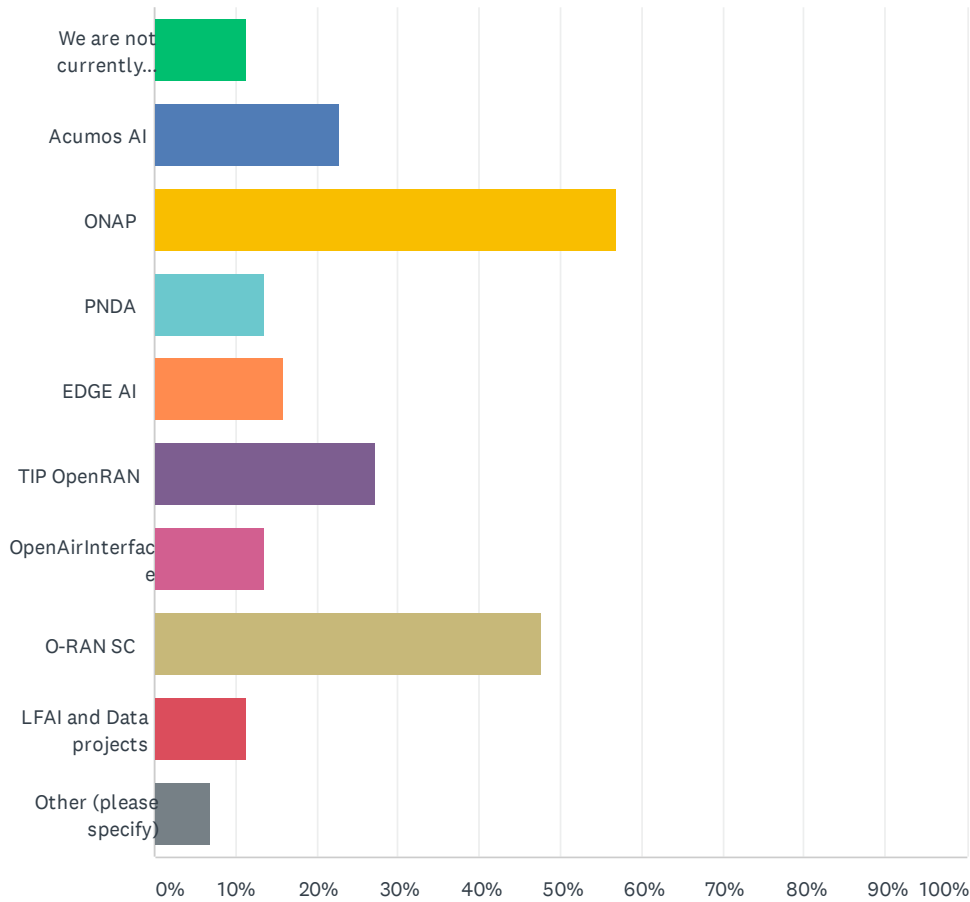
ANSWER CHOICES	RESPONSES	
We are not currently participating in any open source project.	11.36%	5
Acumos AI	22.73%	10
ONAP	56.82%	25
PNDA	13.64%	6
EDGE AI	15.91%	7
TIP OpenRAN	27.27%	12
OpenAirInterface	13.64%	6
O-RAN SC	47.73%	21
LFAI and Data projects	11.36%	5
Other (please specify)	6.82%	3
Total Respondents: 44		

Q13 The overall strategy for improving network intelligence is:

Answered: 39   Skipped: 26
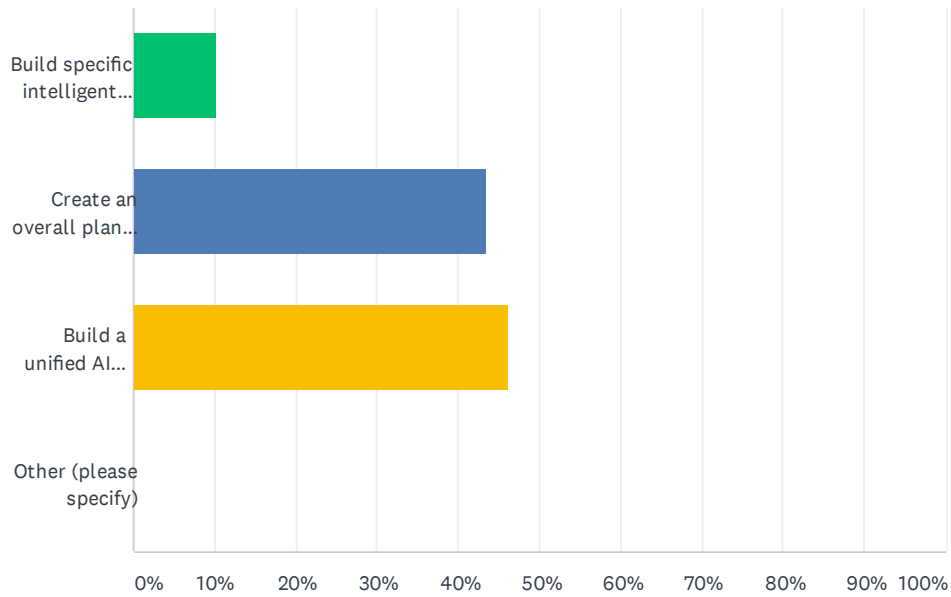
ANSWER CHOICES	RESPONSES	
Build specific intelligent network solutions for each required application	10.26%	4
Create an overall plan for intelligent networking, then evaluate the urgency of each scenario, and build solutions as needed	43.59%	17
Build a unified AI platform suitable for all intelligent network application scenarios	46.15%	18
Other (please specify)	0.00%	0
TOTAL		39

Q14 How will your organization develop the intelligent network applications?

Answered: 36   Skipped: 29
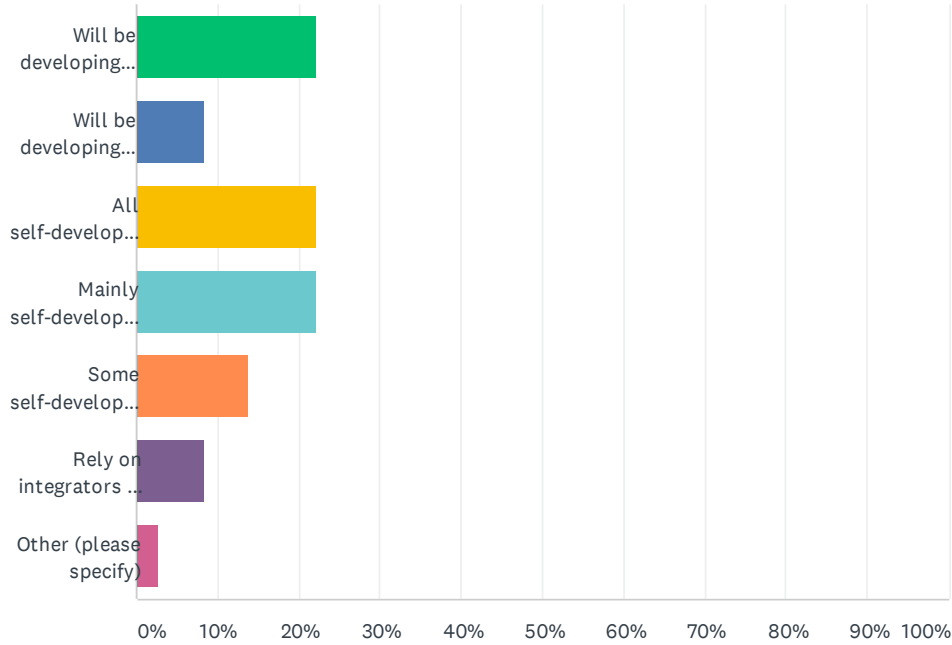
ANSWER CHOICES	RESPONSES	
Will be developing services/applications for resale to Telecom operators	22.22%	8
Will be developing testing solutions for Telecom operators	8.33%	3
All self-developed for in-house use	22.22%	8
Mainly self-developed, partly dependent on integrators	22.22%	8
Some self-developed, most rely on integrators	13.89%	5
Rely on integrators to provide applications	8.33%	3
Other (please specify)	2.78%	1
TOTAL		36

Q15 If your organization is planning a unified AI platform for intelligent network applications, how will you be developing it?

Answered: 38   Skipped: 27
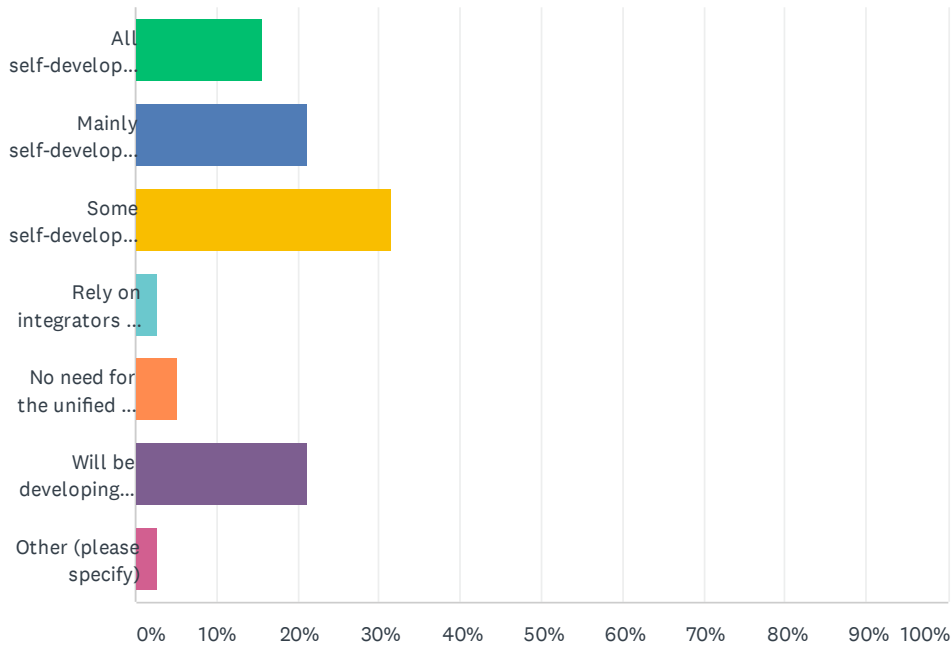
ANSWER CHOICES	RESPONSES	
All self-developed for in-house use	15.79%	6
Mainly self-developed, partly dependent on integrators	21.05%	8
Some self-developed, most rely on integrators	31.58%	12
Rely on integrators to provide applications	2.63%	1
No need for the unified AI platform	5.26%	2
Will be developing services/applications for resale to Telecom operators	21.05%	8
Other (please specify)	2.63%	1
TOTAL		38

Q16 What are the most important considerations building a test and certification service for intelligent network solutions?

Answered: 35   Skipped: 30
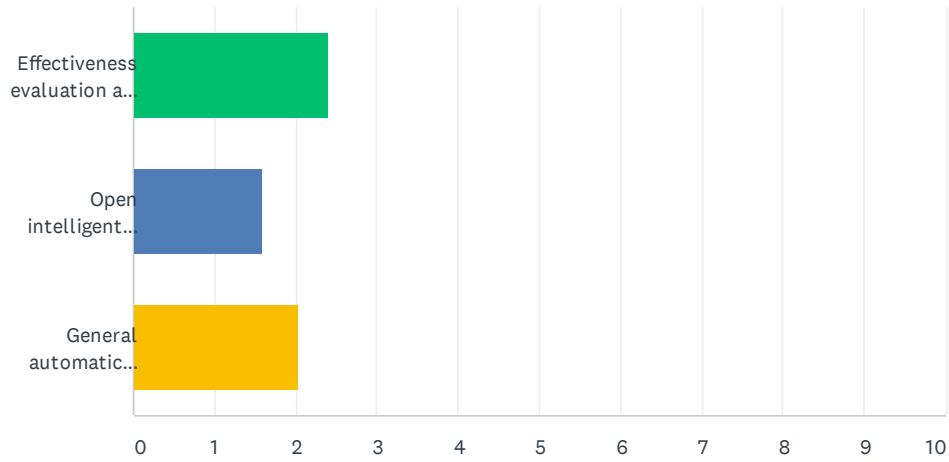
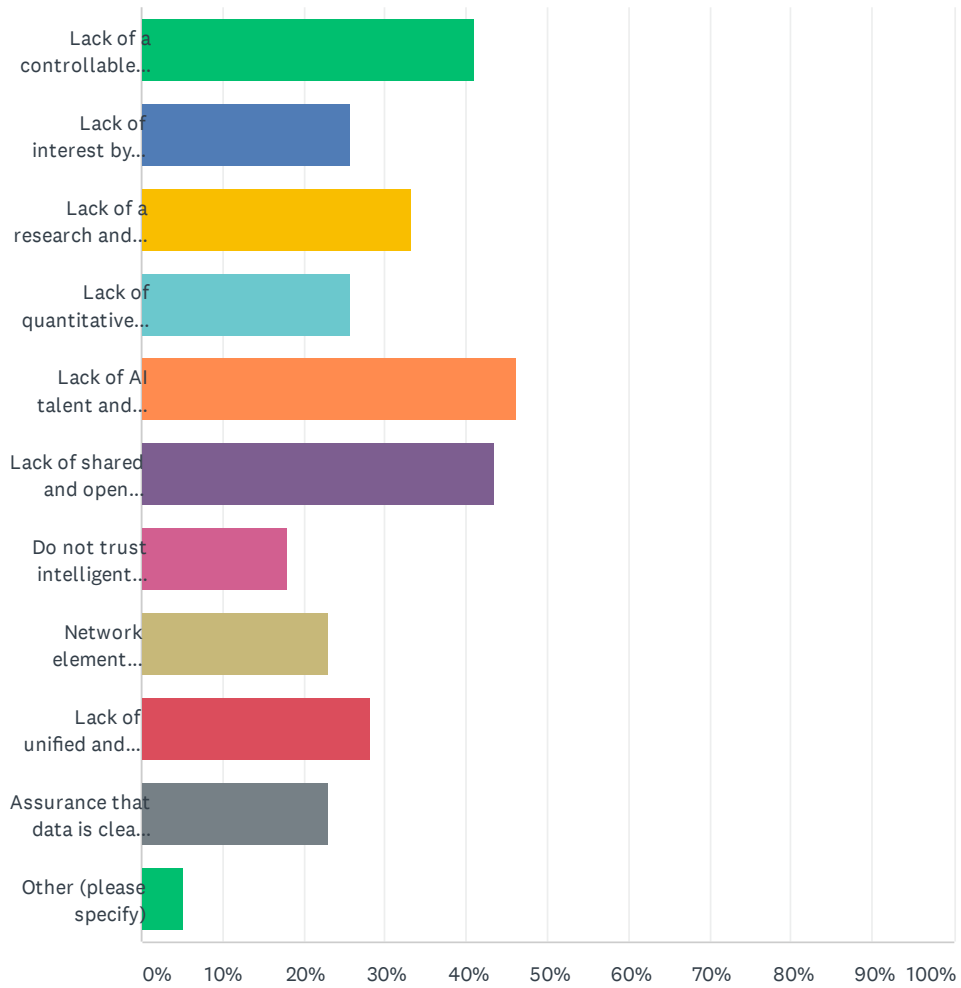|	1	2	3	TOTAL	SCORE
Effectiveness evaluation and testing system for intelligent applications (test cases, data collection, quantitative indicators)	56.25% 18	28.13% 9	15.63% 5	32	2.41
Open intelligent network application certification laboratory, providing a unified surrounding test environment	6.06% 2	45.45% 15	48.48% 16	33	1.58
General automatic evaluation DevOps pipeline for 3rd party software	38.24% 13	26.47% 9	35.29% 12	34	2.03

Q17 List any other considerations not included above for building a test and certification service for intelligent network solutions not listed in the previous question:

Answered: 2   Skipped: 63

ANSWER CHOICES	RESPONSES	
Priority 1:	100.00%	2
Priority 2:	50.00%	1
Priority 3:	50.00%	1
Others:	50.00%	1

Q18 What do you see as the main difficulties for developing intelligent network applications?

Answered: 39   Skipped: 26

ANSWER CHOICES	RESPONSES	
Lack of a controllable network experiment environment to verify the effect of intelligent network applications	41.03%	16
Lack of interest by Telecom operators	25.64%	10
Lack of a research and development environment for open intelligent network applications that allows intelligent applications to be quickly developed, iteratively upgraded and released (DevOps)	33.33%	13
Lack of quantitative indicators for the effect of intelligent network applications and 3rd party testing and certification services, unable to evaluate and certify the effect of intelligent applications, and build intelligent application markets and intelligent ratings	25.64%	10
Lack of AI talent and technical reserves	46.15%	18
Lack of shared and open network data sets	43.59%	17
Do not trust intelligent network control	17.95%	7
Network element transformation needs to be promoted by standards organizations, and the cycle is too long	23.08%	9
Lack of unified and trusted data normalization	28.21%	11
Assurance that data is clean and legal	23.08%	9
Other (please specify)	5.13%	2
Total Respondents: 39		

## Q19 For the following intelligent network planning applications, what scenarios are you most interested in?

Answered: 27   Skipped: 38
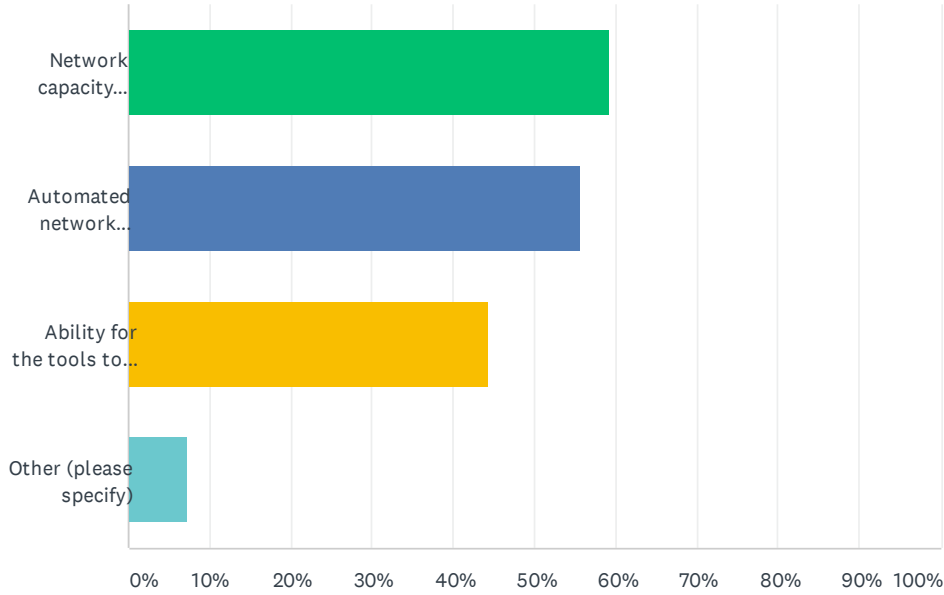
ANSWER CHOICES	RESPONSES	
Network capacity forecast:use AI algorithm to predict network capacity	59.26%	16
Automated network planning and construction:use AI algorithm to automatically plan the topology and routing of network construction	55.56%	15
Ability for the tools to be used by Telecom operators	44.44%	12
Other (please specify)	7.41%	2
Total Respondents: 27		

## Q20 For the following intelligent service assurance applications, what scenarios are you most interested in?

Answered: 25   Skipped: 40
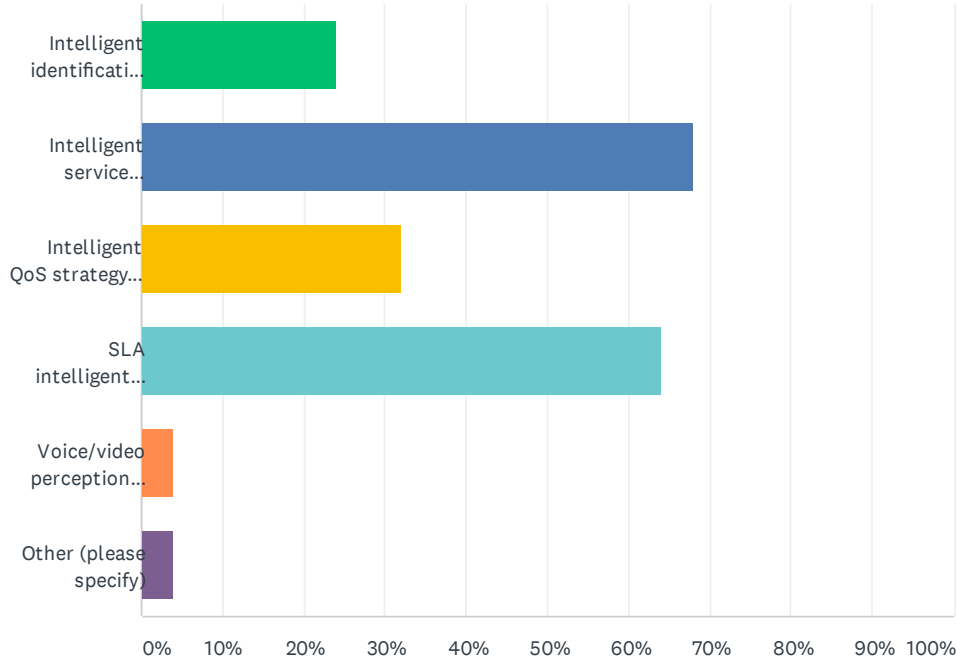
ANSWER CHOICES	RESPONSES	
Intelligent identification of terminal type:IoT terminal types, behavior pattern recognition technical solutions and product prototypes based on network data, laying the foundation for scene-oriented IoT operation and maintenance	24.00%	6
Intelligent service recognition:use AI technology to distinguish network traffic of different services	68.00%	17
Intelligent QoS strategy optimization:based on strategy control architecture of intelligent analysis, research intelligent QoS strategy optimization mechanism based on service quality prediction	32.00%	8
SLA intelligent perception and assurance:aiming at SLA key indicators, combined with AI technology to achieve high-precision measurement of SLA indicators, anomaly detection, change trend prediction, anomaly root cause analysis, etc.	64.00%	16
Voice/video perception intelligent assessment:voice/video service quality assessment, anomaly discovery and location analysis to improve operators' voice/video service perception and monitoring capabilities	4.00%	1
Other (please specify)	4.00%	1
Total Respondents: 25		

Q21 For the following intelligent network operation and maintenance applications, what scenarios are you most interested in?

Answered: 26   Skipped: 39
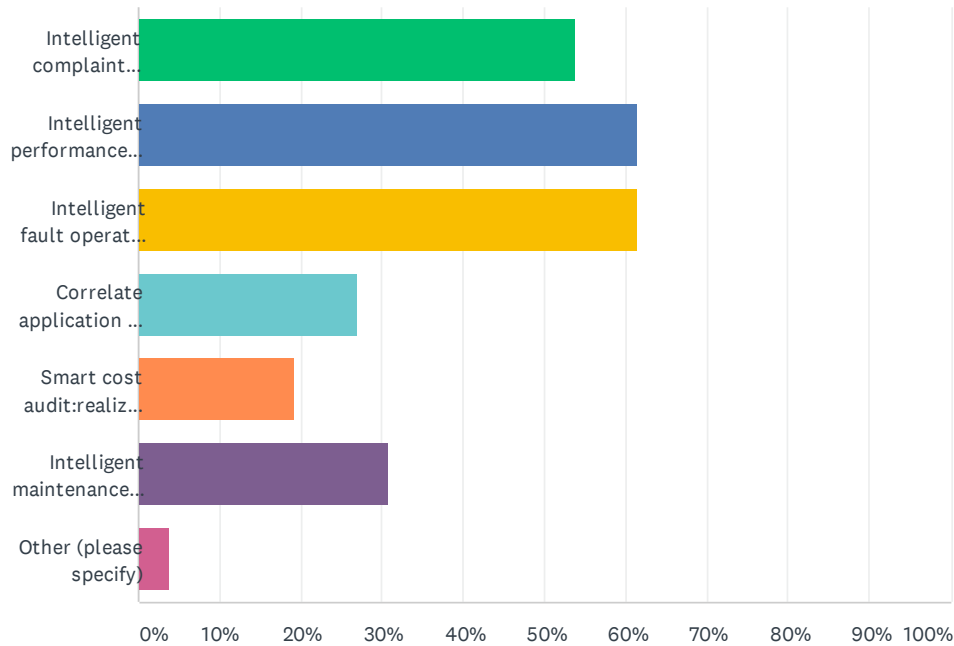
ANSWER CHOICES	RESPONSES	
Intelligent complaint handling:considering network, complaint, business, user and other multi-dimensional data, build end-to-end self-service from user intention perception, network fault location to fault resolution, and improve complaint handling efficiency as well as user experience	53.85%	14
Intelligent performance operation and maintenance:start with the three stages of performance-side problem discovery, failure root cause analysis, and failure receipt verification to improve performance operation and maintenance efficiency	61.54%	16
Intelligent fault operation and maintenance:according to the goal of network fault discovery and processing efficiency improvement, give network health evaluation	61.54%	16
Correlate application VNF and Infra level Metrics and give suggestions for KQI improvement	26.92%	7
Smart cost audit:realize smart electricity bill auditing with AI technology and big data technology	19.23%	5
Intelligent maintenance quality inspection:use AI to assist staff in quality control	30.77%	8
Other (please specify)	3.85%	1
Total Respondents: 26		

## Q22 For the following intelligent network optimization applications, what scenarios are you most interested in?

Answered: 23   Skipped: 42
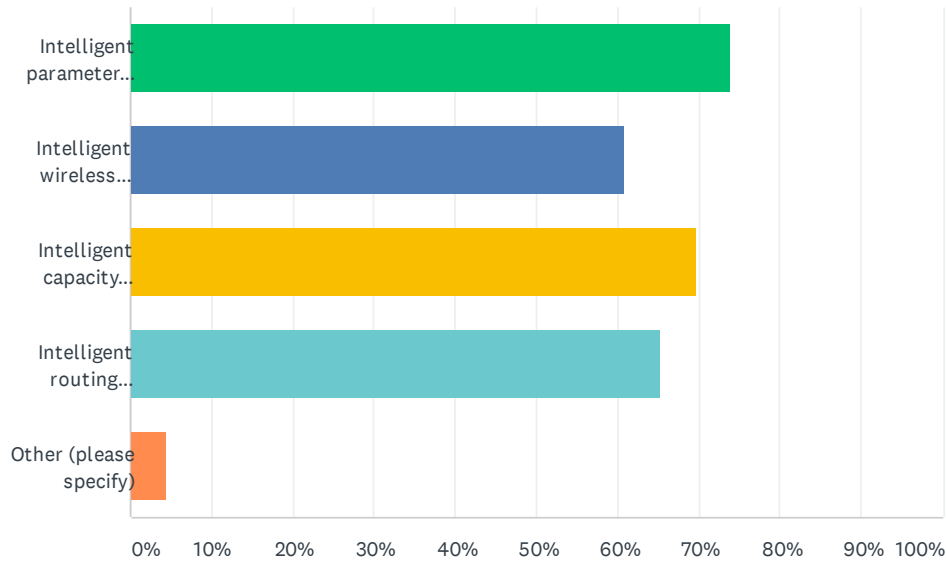
ANSWER CHOICES	RESPONSES	
Intelligent parameter optimization:build network element feature profile and neighboring cell correlation modeling, optimize intelligent SON parameters	73.91%	17
Intelligent wireless coverage optimization:use machine learning to learn the best behavior of the network state, and optimize the wireless coverage through parameter optimization	60.87%	14
Intelligent capacity optimization:predict 5G capacity and realize precise formulation of wireless network resource adjustment plan	69.57%	16
Intelligent routing adjustment:use AI technology to predict network traffic and select the optimal path for traffic	65.22%	15
Other (please specify)	4.35%	1
Total Respondents: 23		

Q23 For the following intelligent energy efficiency management applications, what scenarios are you most interested in?

Answered: 23   Skipped: 42
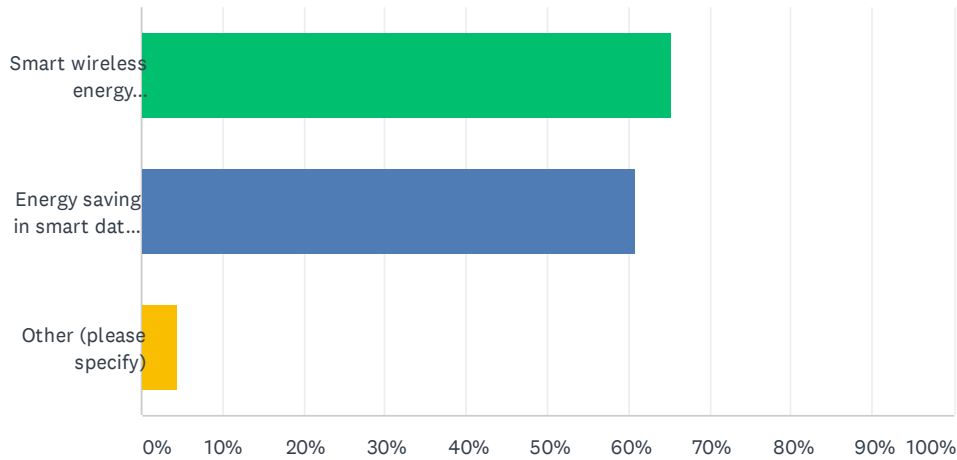
ANSWER CHOICES	RESPONSES	
Smart wireless energy saving:realize energy saving of smart wireless base station through AI technology	65.22%	15
Energy saving in smart data centers:develop new control algorithms based on big data and artificial intelligence technology to achieve the best overall energy efficiency of data center	60.87%	14
Other (please specify)	4.35%	1
Total Respondents: 23		

## Q24 For the following intelligent network security applications, what scenarios are you most interested in?

Answered: 23   Skipped: 42
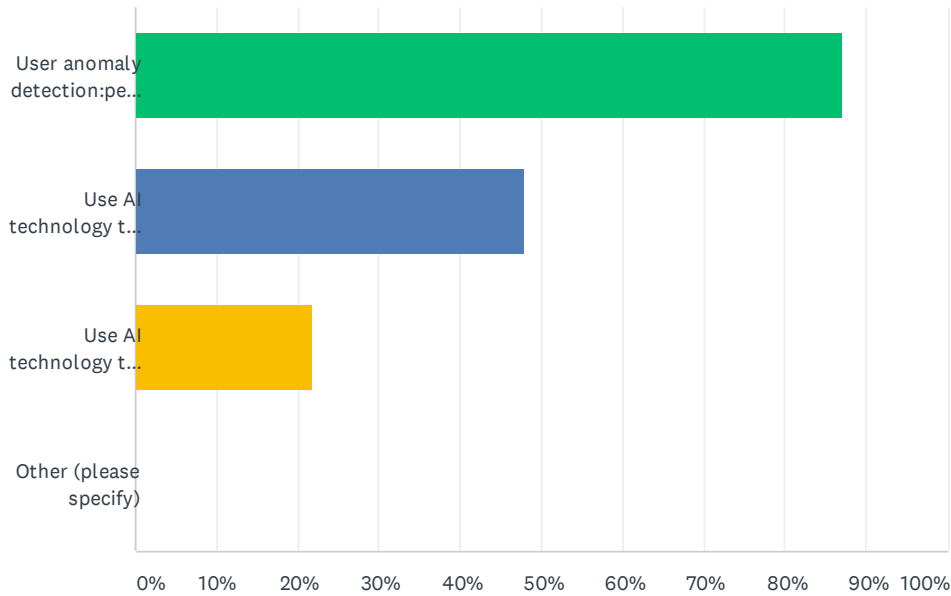
ANSWER CHOICES	RESPONSES	
User anomaly detection:perform mining and analysis of operation and maintenance operation log data, complete anomaly detection and analysis of user operation logs, and ensure the security of network operation and maintenance operations	86.96%	20
Use AI technology to detect cyber attacks, such as DDOS and other cyber attacks	47.83%	11
Use AI technology to detect pornographic and terrorist-related content and information on the internet	21.74%	5
Other (please specify)	0.00%	0
Total Respondents: 23		

## Q25 For the following intelligent network element autonomy applications, what scenarios are you most interested in?

Answered: 24   Skipped: 41
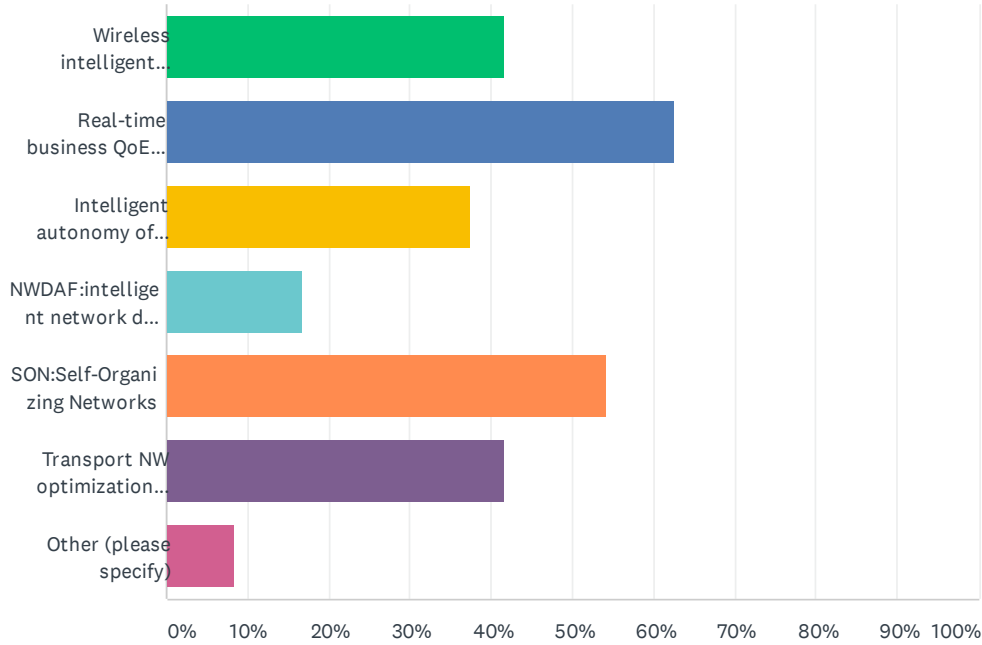
ANSWER CHOICES	RESPONSES	
Wireless intelligent load balancing:combine wireless information and intelligent algorithms to select opportunity and target cell for load balancing	41.67%	10
Real-time business QoE prediction and intelligent wireless scheduling optimization:combine wireless information and intelligent algorithms to improve the experience of operators' services (for example high-definition video, etc.)	62.50%	15
Intelligent autonomy of core network elements:research intelligent autonomy of core network elements	37.50%	9
NWDAF:intelligent network data analysis	16.67%	4
SON:Self-Organizing Networks	54.17%	13
Transport NW optimization specially on Metro back haul	41.67%	10
Other (please specify)	8.33%	2
Total Respondents: 24		

Q26 If you are implementing intelligent networks solutions by scenario, how are you planning to achieve the coordination and unification of the different application scenarios?

Answered: 24   Skipped: 41
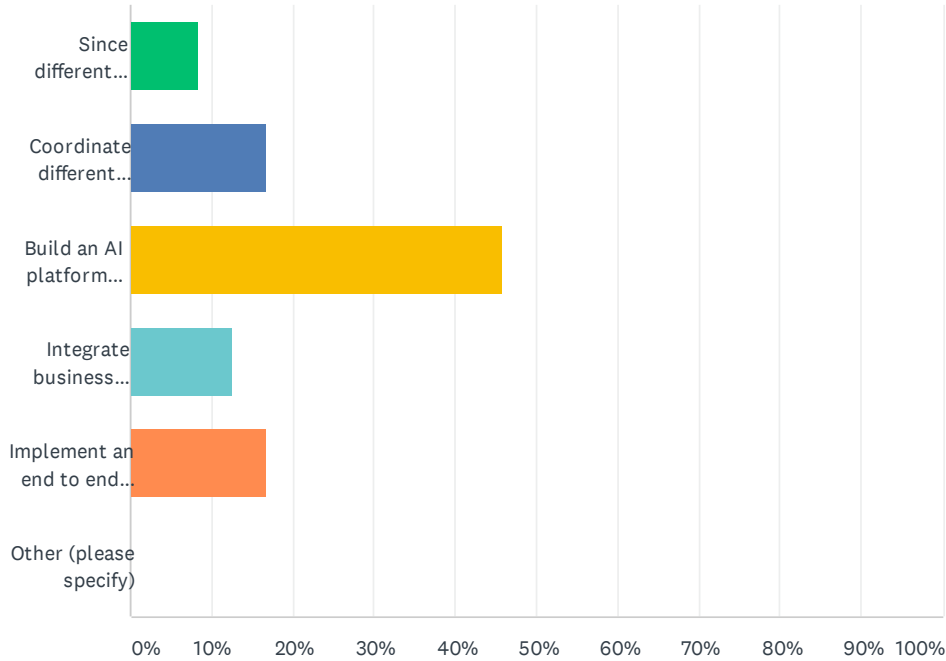
ANSWER CHOICES	RESPONSES	
Since different application scenarios have different intelligent solutions, no need for coordination.	8.33%	2
Coordinate different vendor solutions at the network element level	16.67%	4
Build an AI platform suitable for all intelligent network application scenarios	45.83%	11
Integrate business systems (BSS) and Network Elements with the AI system	12.50%	3
Implement an end to end process using AI tools	16.67%	4
Other (please specify)	0.00%	0
TOTAL		24

Q27 What functions should be provided by a generic intelligent network platform?

Answered: 25   Skipped: 40
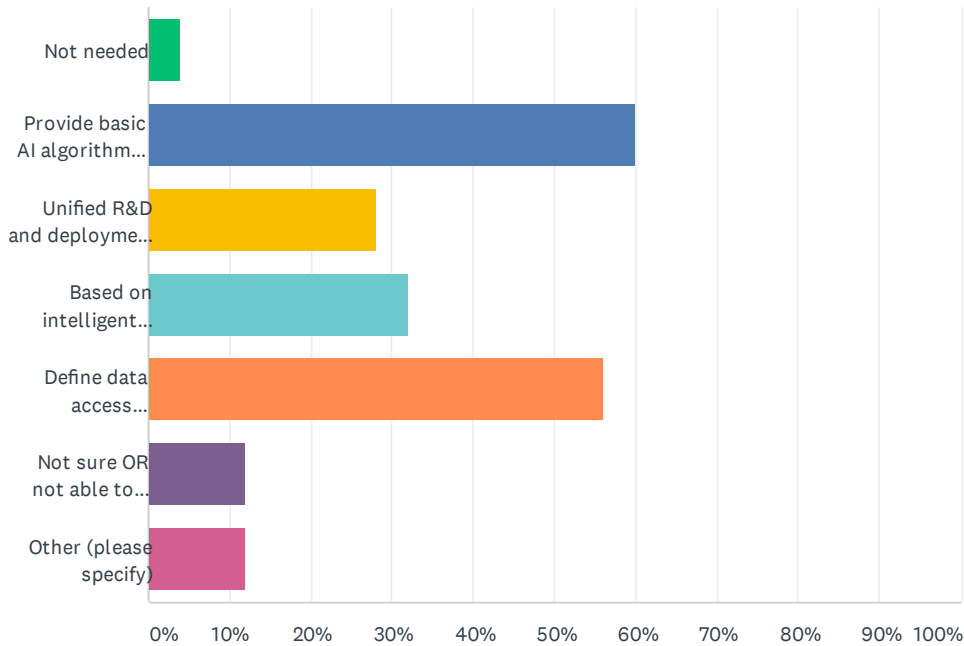
ANSWER CHOICES	RESPONSES	
Not needed	4.00%	1
Provide basic AI algorithms, algorithm frameworks, training capabilities, etc. through a unified intelligent platform	60.00%	15
Unified R&D and deployment of general intelligent network capabilities for various intelligent network applications	28.00%	7
Based on intelligent network capabilities, provide common business capabilities and applications	32.00%	8
Define data access capabilities and provide raw data, training data and subject data to other functions or capabilities through access and processing of external data sources	56.00%	14
Not sure OR not able to disclose	12.00%	3
Other (please specify)	12.00%	3
Total Respondents: 25		

## Q28 What is the current status for the network OAM in your organization?

Answered: 22   Skipped: 43
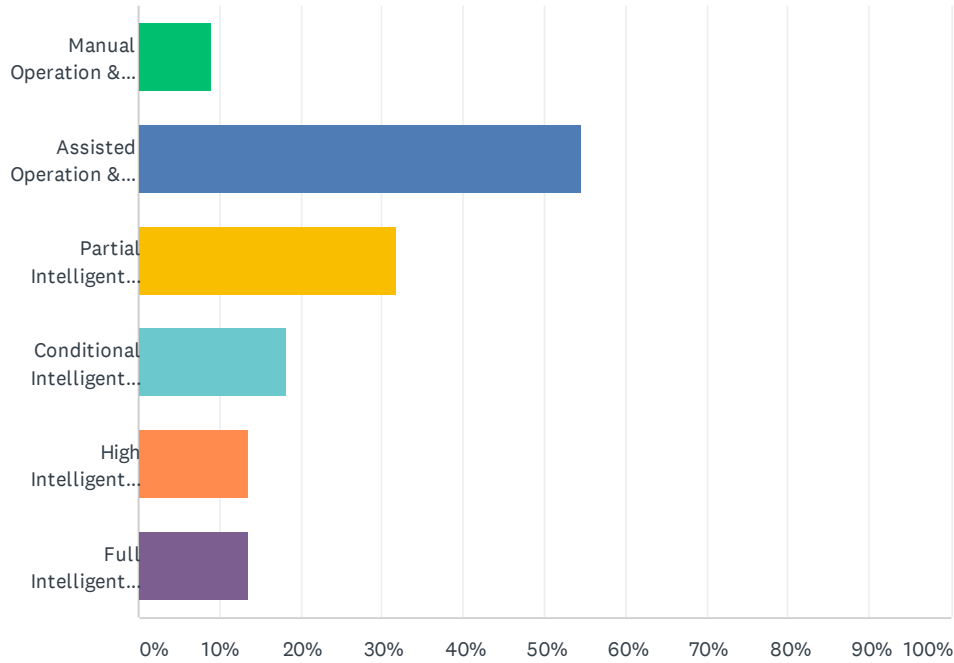
ANSWER CHOICES	RESPONSES	
Manual Operation & Maintenance: O&M person manually executes all dynamic tasks	9.09%	2
Assisted Operation & Maintenance: automate repeated actions or redundant information elimination based on rules	54.55%	12
Partial Intelligent Network: automatic analysis and automatic decision-making based on dynamic strategies in some scenarios	31.82%	7
Conditional Intelligent Network: automatic analysis of dynamic strategies in specific scenarios, pre-designed scenarios to assist manual decision-making	18.18%	4
High Intelligent Network: the system realizes a complete closed loop of dynamic strategy, pre-designed scenarios and the system automatically completes requirement mapping	13.64%	3
Full Intelligent Network: all scenarios systems complete closed loops, and the systems automatically complete requirement mapping	13.64%	3
Total Respondents: 22		

Q29 What intelligent applications would you like to see on an AI/ML platform?

Answered: 27   Skipped: 38
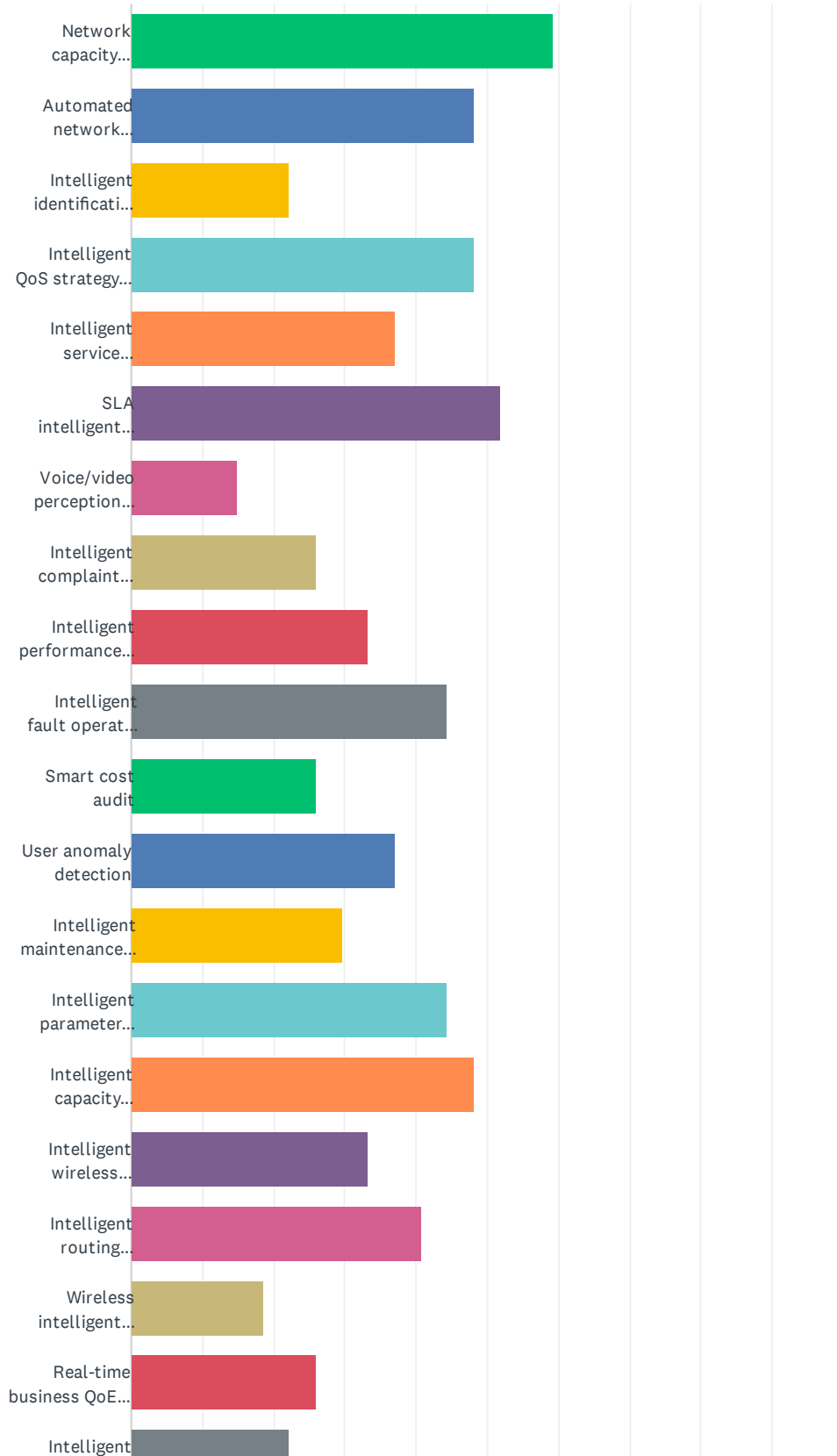
Intelligent Network and AI Survey for Telecom Operators, Vendors and AI communities
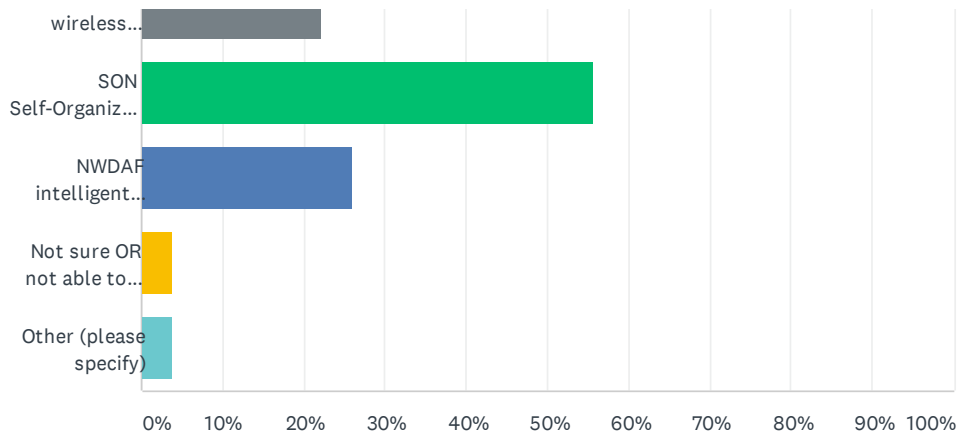
ANSWER CHOICES	RESPONSES	
Network capacity forecast	59.26%	16
Automated network planning and construction	48.15%	13
Intelligent identification of terminal type	22.22%	6
Intelligent QoS strategy optimization	48.15%	13
Intelligent service recognition	37.04%	10
SLA intelligent perception and assurance	51.85%	14
Voice/video perception intelligent assessment	14.81%	4
Intelligent complaint handling	25.93%	7
Intelligent performance operation and maintenance	33.33%	9
Intelligent fault operation and maintenance	44.44%	12
Smart cost audit	25.93%	7
User anomaly detection	37.04%	10
Intelligent maintenance quality inspection	29.63%	8
Intelligent parameter optimization	44.44%	12
Intelligent capacity optimization	48.15%	13
Intelligent wireless coverage optimization	33.33%	9
Intelligent routing adjustment	40.74%	11
Wireless intelligent load balancing	18.52%	5
Real-time business QoE prediction and intelligent wireless scheduling optimization	25.93%	7
Intelligent wireless scheduling optimization	22.22%	6
SON Self-Organizing Networks	55.56%	15
NWDAF intelligent network data analysis	25.93%	7
Not sure OR not able to disclose	3.70%	1
Other (please specify)	3.70%	1
Total Respondents: 27		