



LFN Developer & Testing Forum

Testing and Certification Requirements from EUAG Intelligent Network and AI Survey

Yan Yang

yangyanyj@chinamobile.com

Intelligent Network and AI Survey

- **Organization** : LFN EUAG
- **Participants** : All members of the LFN community
- **Motivation**: Investigate the current needs and application status of network automation and intelligence in the industry, study and judge development trends, refine common needs, and discuss in depth how to use open industrial cooperation models to consolidate industry consensus, unify technical routes, research and development reference realization, formulate industry standards, Promote the network from automation to intelligence.
- **Response**: 65 participants, anonymous
- **Survey Design**: 29 Questions

Intelligent Network and AI Survey

Basic Information

- Company Information (Q1-Q4)
- Driving force (Q5)
- Intelligent stage (Q6-7, Q28)

Demand Scenarios

- Business priority (Q8-Q9, Q19-Q25)
- R&D Challenge (Q18)

R&D strategy

- Decentralized/platform (Q13, Q26)
- Self-research/outourcing (Q14-Q15)
- Platform function (Q27, Q29)

Ecological strategy

- Standard (Q11)
- Open source (Q12)
- Certification (Q10, Q16)

Requirements Analysis - Q18

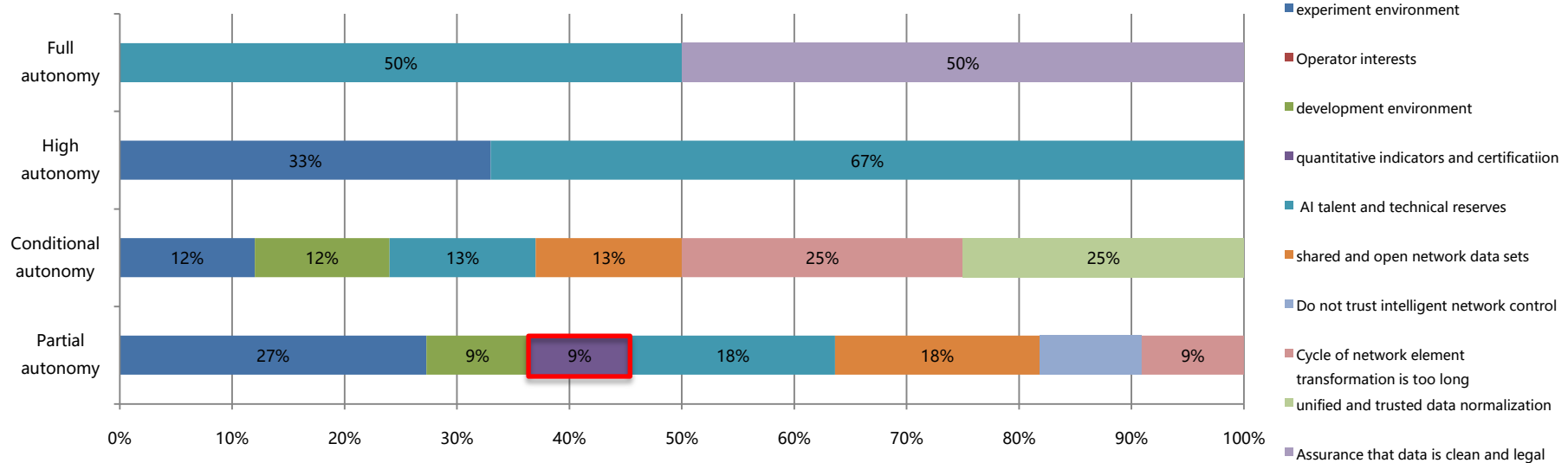
Q18: What do you see as the main difficulties for developing intelligent network applications? (Multiple Choice) Answered: 39

No	Choice	Response	Rank
1	Lack of AI talent and technical reserves	46.15%	1
2	Lack of shared and open network data sets	43.59%	2
3	Lack of a controllable network experiment environment to verify the effect of intelligent network applications	41.03%	3
4	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%	4
5	Lack of unified and trusted data normalization	28.21%	5
6	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%	6
7	Lack of interest by Telecom operators	25.64%	6
8	Network element transformation needs to be promoted by standards organizations, and the cycle is too long	23.08%	7
9	Assurance that data is clean and legal	23.08%	7
10	Do not trust intelligent network control	17.95%	8

Lack of quantitative indicators for the effect of intelligent network applications and 3rd party testing and certification services is the **intermediate challenge for all organizations**

Requirements Analysis from Operator Perspective – Q18

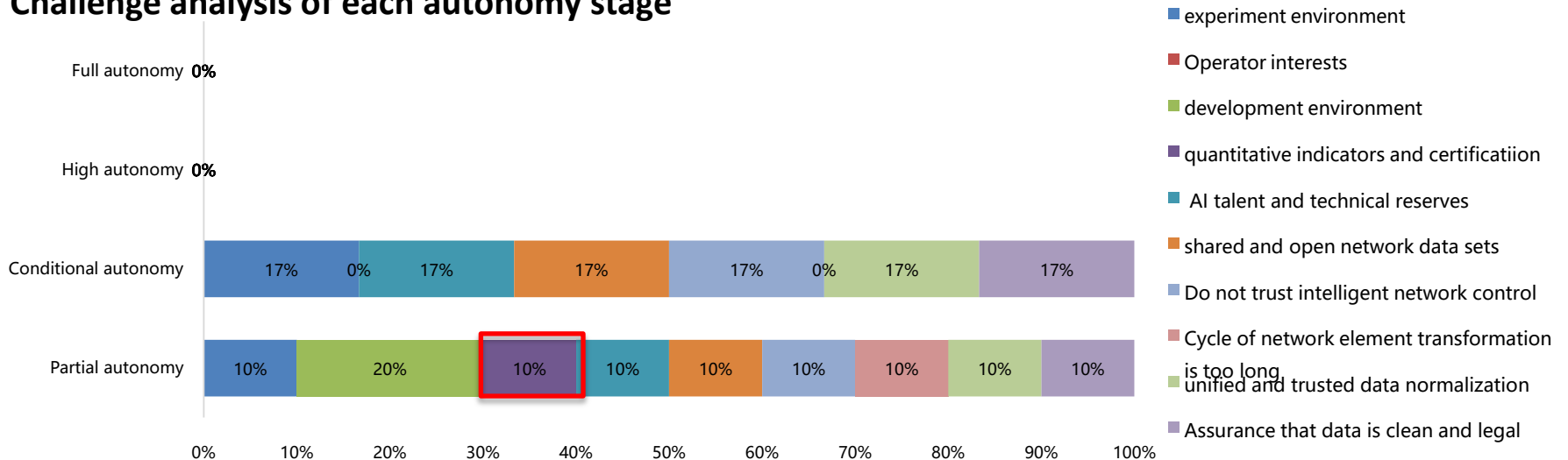
Challenge analysis of each autonomy stage



Lack of quantitative indicators for the effect of intelligent network applications and 3rd party testing and certification services:

- Not the most important challenge in the operator's partial autonomy phase
- But is **a problem that operators must solve from partial autonomy to high level autonomy**

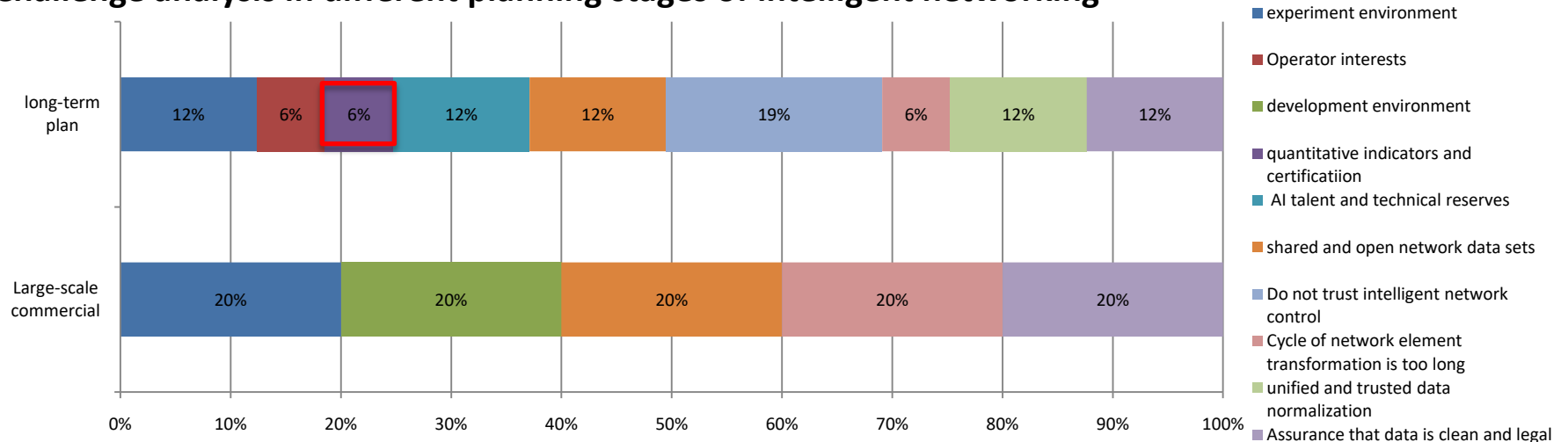
Challenge analysis of each autonomy stage



- The main challenges in the partial autonomy stage: lack of R&D environment、 long standardization cycle for network element、 **lack of quantitative indicators and testing and certification services**
- **lack of quantitative indicators and testing and certification services is also a problem that digital service provider must solve from partial autonomy to high level autonomy**

Requirements Analysis from Vendor Perspective – Q18

Challenge analysis in different planning stages of intelligent networking



Lack of quantitative indicators and testing and certification services:

- It is not a problem that urgently needs to be solved in the Vendor scale application stage
- But it's listed as vendor's long-term plan

Analysis conclusion – Q18

Lack of quantitative indicators and testing and certification services:

- Operator: a problem that must solve from partial autonomy to high level autonomy
- Digital Service Provider: One of the top three challenges and also a problem that digital service provider must solve from partial autonomy to high level autonomy
- Vendor : listed as vendor's long-term plan

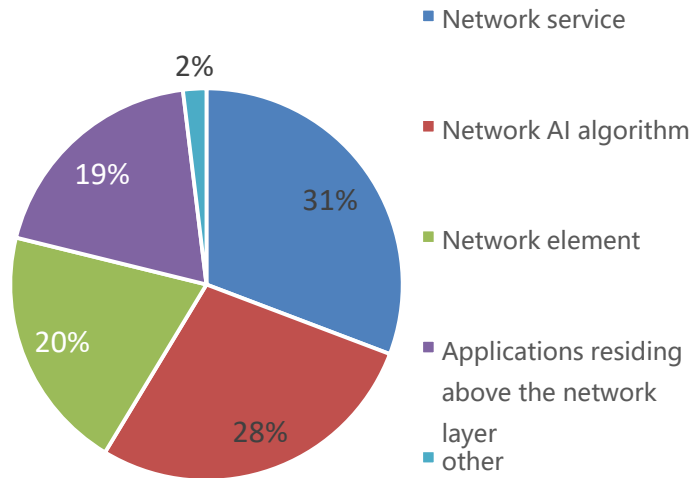


Building a test and certification effect evaluation system oriented to intelligent networking is a common industry demand

Requirements Analysis - Q10

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: (Multiple Choice)

• Answered: 42



The objects of network intelligent certification and evaluation:

- Network services and network intelligent AI algorithms (**First priority**)
- Intelligent network elements and applications built on the network layer (Second priority)

Suggestions:

- CVC/OVP focus on network element and network service certification
- Organizations such as LF AI are responsible for AI algorithm certification

Requirements Analysis – Q16

Q16: What are the most important considerations building a test and certification service for intelligent network solutions? Answered: 35

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

- Calculation method description: Priority score = $\sum_{i=1}^3 r_i p_i$, $r_i > r_{i-1}, p_i > p_{i-1}$, r is grade, p is percentage
- Rank:

RANK	OPTION	SCORE	Priority
1	Effectiveness evaluation and testing system for intelligent applications (test cases, data collection, quantitative indicators)	2.41	Highest
2	General automatic evaluation DevOps pipeline for 3rd party software	2.03	High
3	Open intelligent network application certification laboratory, providing a unified surrounding test environment	1.58	medium

Analysis conclusion – Q10&Q18

The work priority for building a test and certification service for intelligent network from survey:

- Effectiveness evaluation and testing system for intelligent applications (test cases, data collection, quantitative indicators) (**highest**)
- General automatic evaluation DevOps pipeline for 3rd party software (high)
- Open intelligent network application certification laboratory, providing a unified surrounding test environment (medium)

Suggestion: **All needs to be considered within the scope of CVC/OVP**



Recommendations for CVC/OVP

Preparation for launch OVP3.0 to promote the development of the next generation of OVP badges for intelligent networking, focused on supporting the telecom's adoption and deployment of network intelligent technologies and exploring the best practices from industry.

OVP3.0 works in parallel with OVP1.0 and OVP2.0 and accepts the supervision and guidance of CVC.

OVP3.0 will explore the following items for supporting intelligent network elements and services related test and certification :

- Test and evaluation requirements
- Tools requirements
- Implementation
- Automatic certification DevOps
- Lab & Integration
-other items

Collaborative Suggestions with Network Intelligent SDOs

- Intelligent/Autonomous Levels: TMF
- Intelligent/Autonomous Network Maturity Model : TMF ANMM
- Automatic/Intelligent DevOps: ETSI (NFV TST006)
- Network Intelligent Platform : ONAP
- Open 4G/5G network element : OpenAirInterface



The overall idea: based on standard requirements, with the LFN open source platform as the basis of the surrounding test environment, to achieve a reference implementation of intelligent network certification

Specific cooperation suggestions:

- Test and evaluation requirements (TMF)
- Tools requirements(TMF)
- Automatic certification DevOps(ETSI)
- Lab & Integration (TMF, OpenAirInterface, ONAP, Anuket)



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