All-IP-Produktion

Aktuelle Entwicklungen

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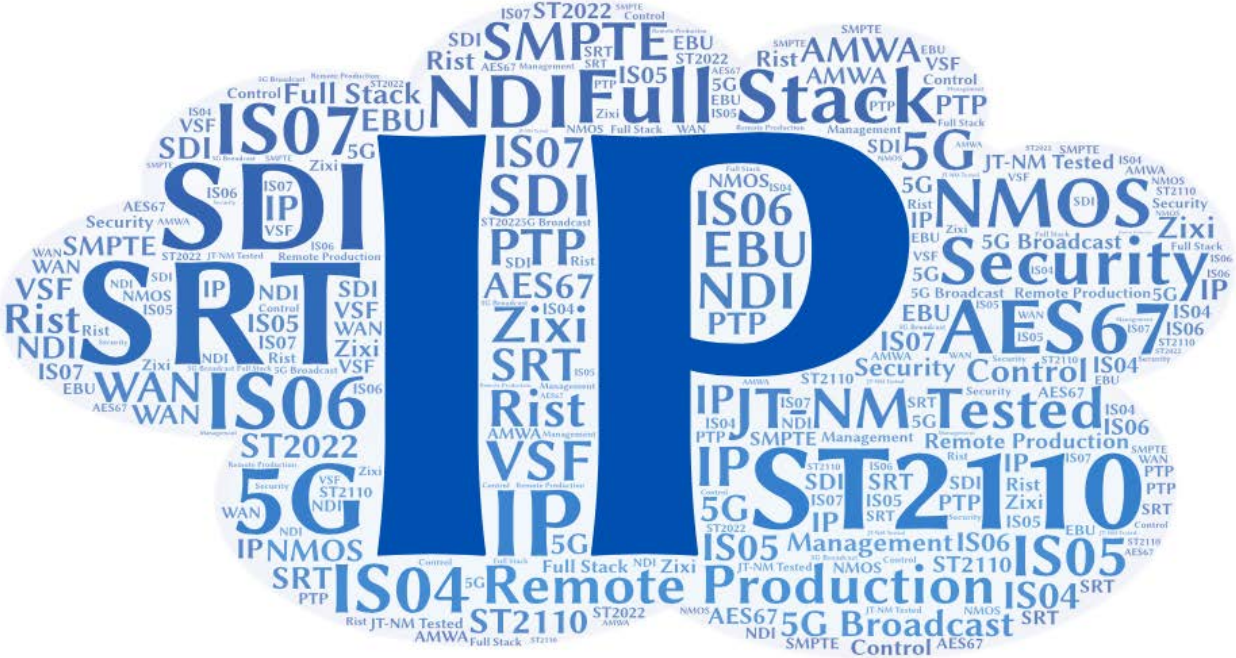
IP
SDI
SRT
IS06
5G
IS04
Remote Production
ST2110
NMOS
Security
AES67
Control
Tested
JT-NM
Broadcast
Full Stack
NDI
SMPTE
ST2022
IS07
IS05
Management
Rist
AMWA
VSF
WAN
Zixi
PTP
EBU

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Agenda

Vision – wo wollen wir hin?

Realitätscheck – wo stehen wir?

Trends und Entwicklungen – welchem Ziel kommen wir wie näher?

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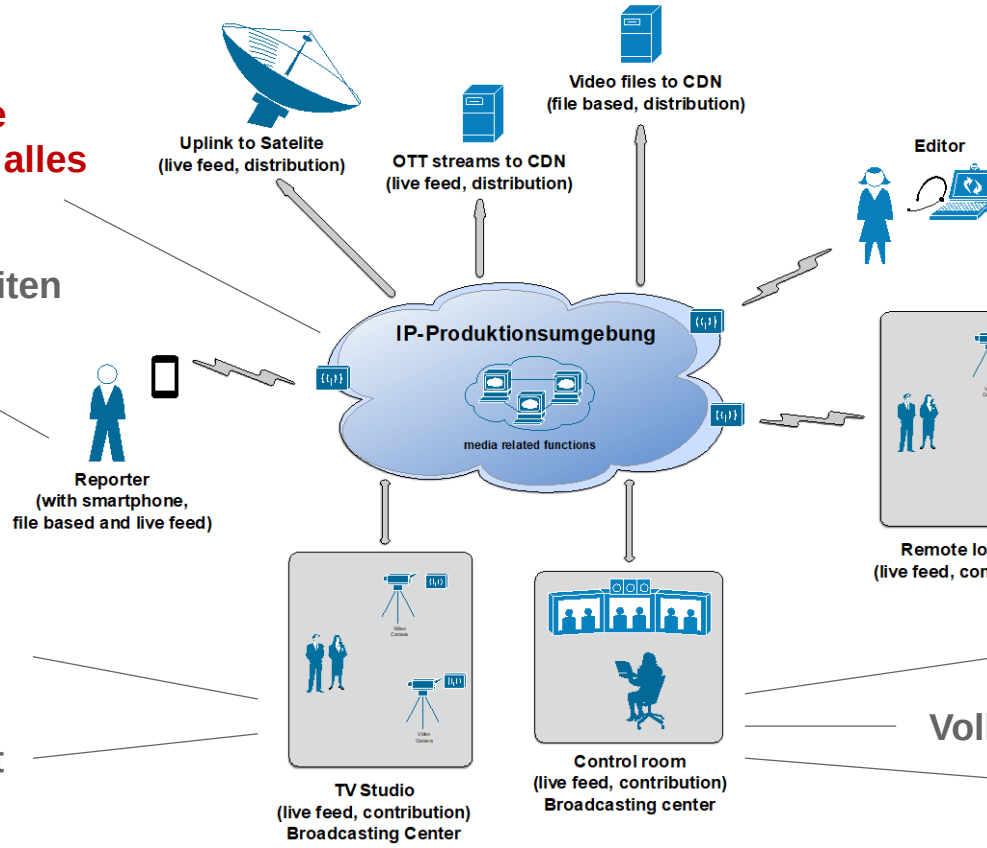
Vision

Eine einheitliche Infrastruktur für alles



Mobiles Arbeiten

Flexibilität

Niedrige Reaktionszeiten

Nahtlose Übergänge

Verteilte Teams

Neue Medienformate

Produktionssicherheit

Ressourcenteilung

Volle Kontrolle und Übersicht

Sicherheit

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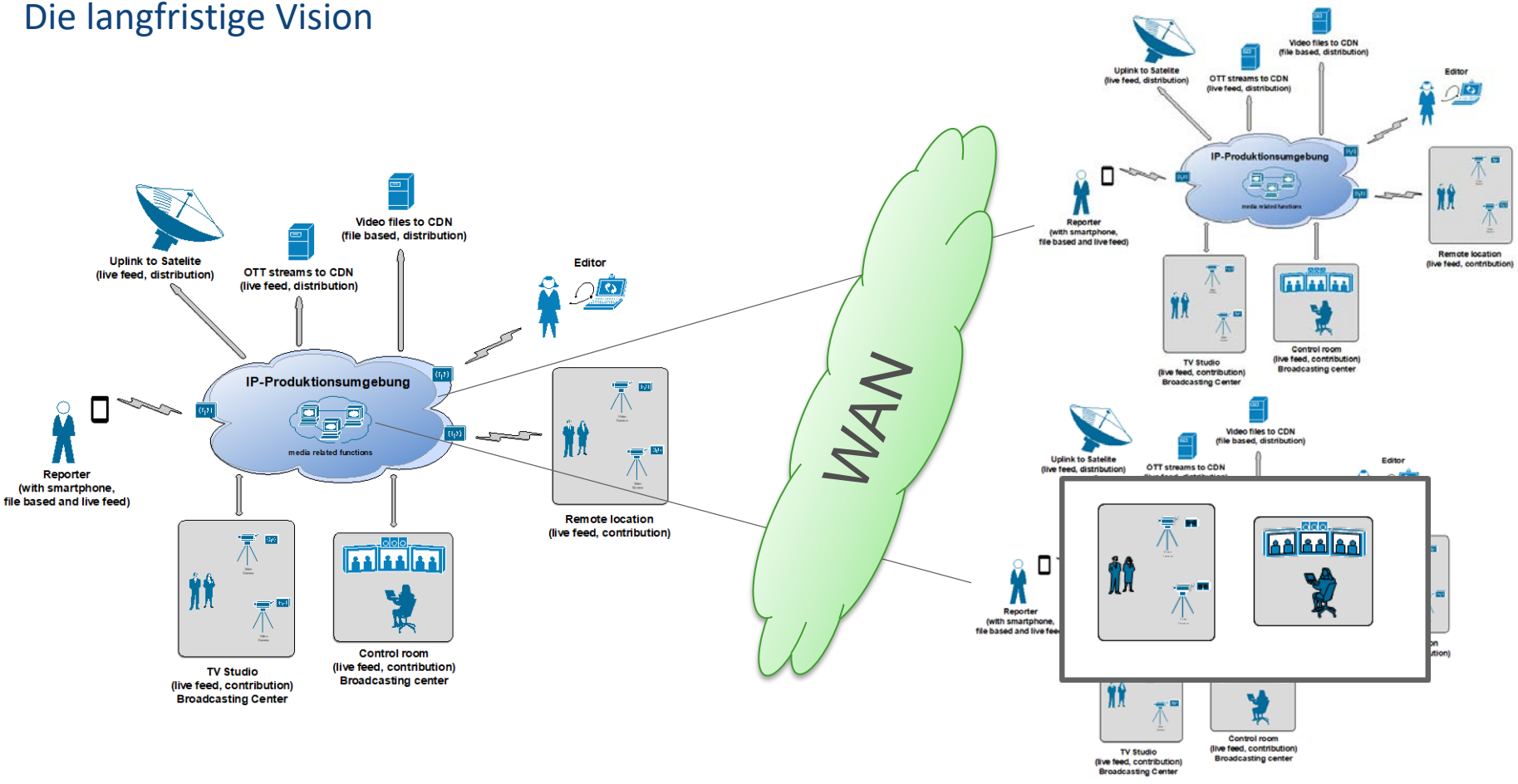
Die langfristige Vision



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Realitätscheck – wo stehen wir?

Mehr Informationen unter:
https://tech.ebu.ch/publications/tech3371

The Technology Pyramid for Media Nodes

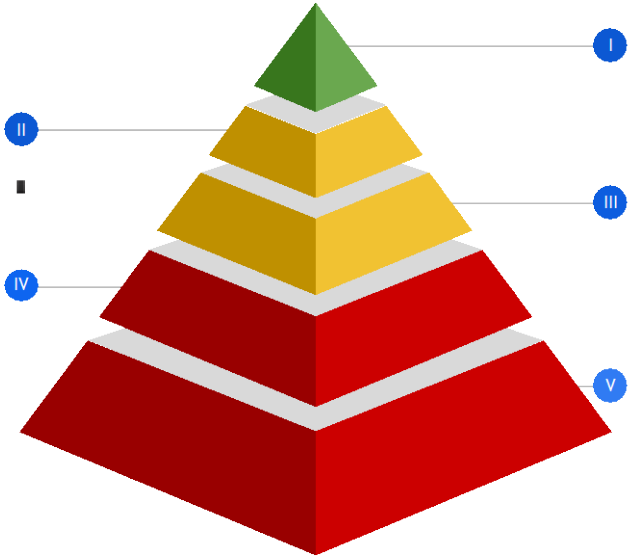
Minimum User Requirements to Build and Manage an IP-Based Media Facility.

Time and Sync

- PTPv2 configurable within SMPTE and AES profiles
- Multi-interface PTP redundancy
- Synchronisation of audio, video and data essences

Configuration and Monitoring

- IP assignment: DHCP
- Open configuration management - e.g., API, config file, SSH CLI, etc.
- Open monitoring protocol - e.g., syslog, agent, SNMPv3, etc.



Media Transport

- Single link video SMPTE ST 2110-20
- Software-friendly SMPTE ST 2110-21 Wide video receivers
- Universal, multichannel and low latency audio SMPTE ST 2110-30 Level C
- Stream protection with SMPTE ST 2022-7

Discovery and Connection

- Discovery and Registration: AMWA IS-04
- Connection Management: AMWA IS-05
- Audio channel mapping: AMWA IS-08 (in dev.)
- Topology discovery: LLDP

NMOS

Security

- EBU R 148 Security Tests
- EBU R 143 Security Safeguards
- Secure HTTPS API calls

Widely available
Partially available
Rarely available

EBU

EBU TECH 3371 - December 2018

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Trends und Entwicklungen

Full Stack Profil weiterentwickeln

Remote Production – hier RIST/ZIXI/SRT

Sicherheit – Security is a thing!

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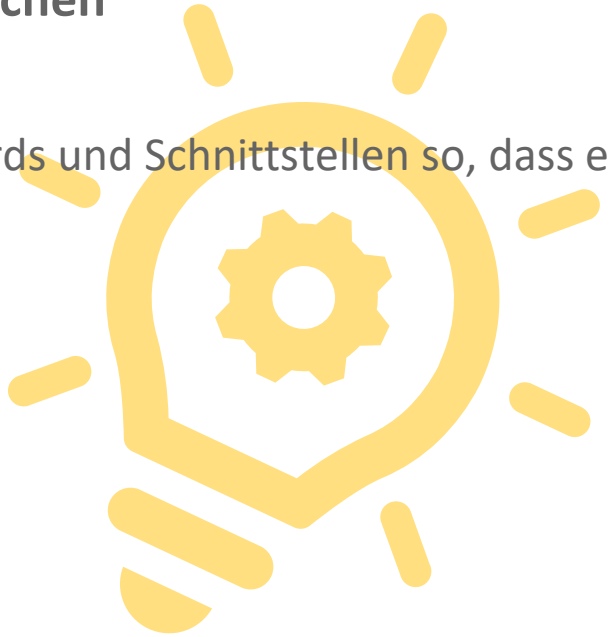
Entwicklung: Full – Stack – Profil

Ziel: IP (ST2110) für die Produktion nutzbar machen

Was heißt Full – Stack – Profil?

- Zusammenstellung von Protokollen, Standards und Schnittstellen so, dass eine Plug-und-Play Nutzung möglich wird
- bei voller Interoperabilität



Wer arbeitet daran? Alle!

- SMPTE, VSF, AMWA, AES, EBU, IRT

Größte Arbeiten derzeit:

- NMOS, JT-NM, AMWA

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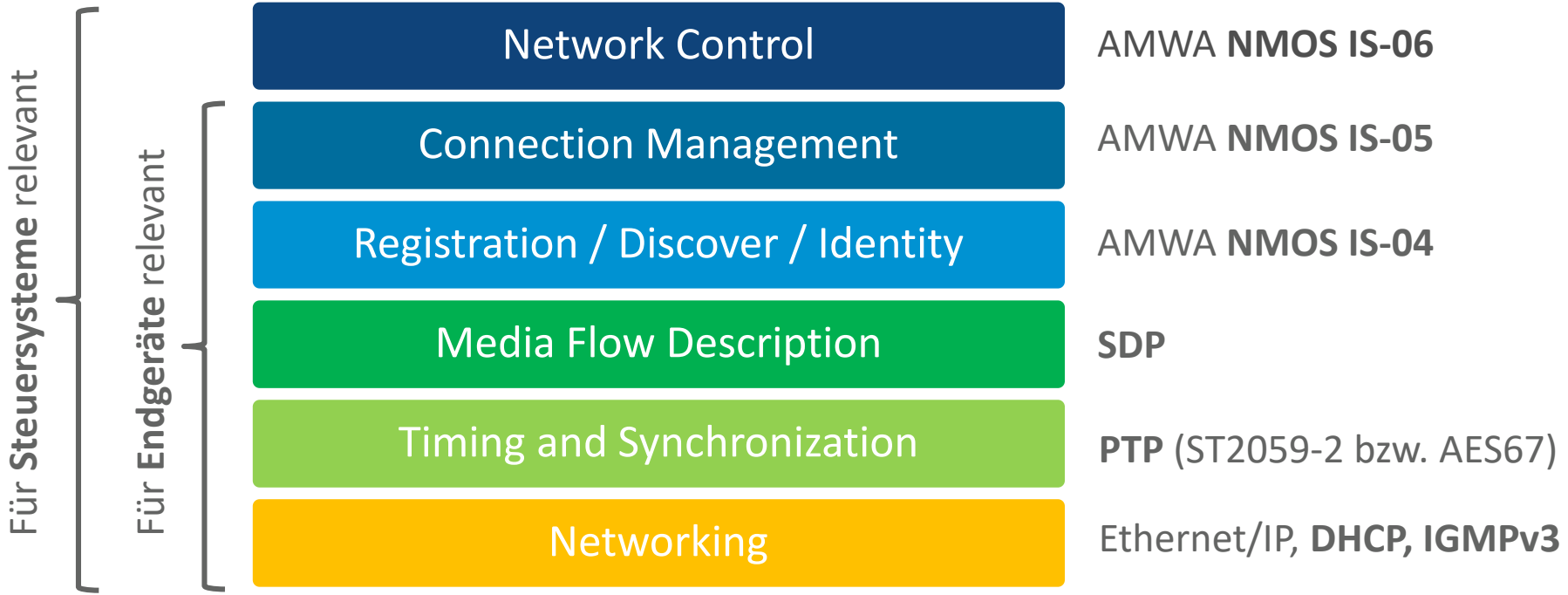
Full – Stack – Profil: NMOS für Netzwerk



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Full – Stack – Profil: **NMOS - Übersicht**

Id	Name	Spec Status
IS-04	Discovery & Registration	AMWA Specification (Stable)
IS-05	Device Connection Management	AMWA Specification (Stable)
IS-06	Network Control	AMWA Specification
IS-07	Event & Tally	AMWA Specification
IS-08	Audio Channel Mapping	AMWA Specification
IS-09	System	Work In Progress
IS-10	Authorization	Work In Progress
MS-04	ID & Timing Model	Work In Progress
BCP-002-01	Natural Grouping	AMWA Specification
BCP-003-01	API Security: Communications	AMWA Specification
BCP-003-02	API Security: Authorization	Work In Progress

Alle Specs unter
https://www.amwa.tv/nmos

BCP: Best Common Practice

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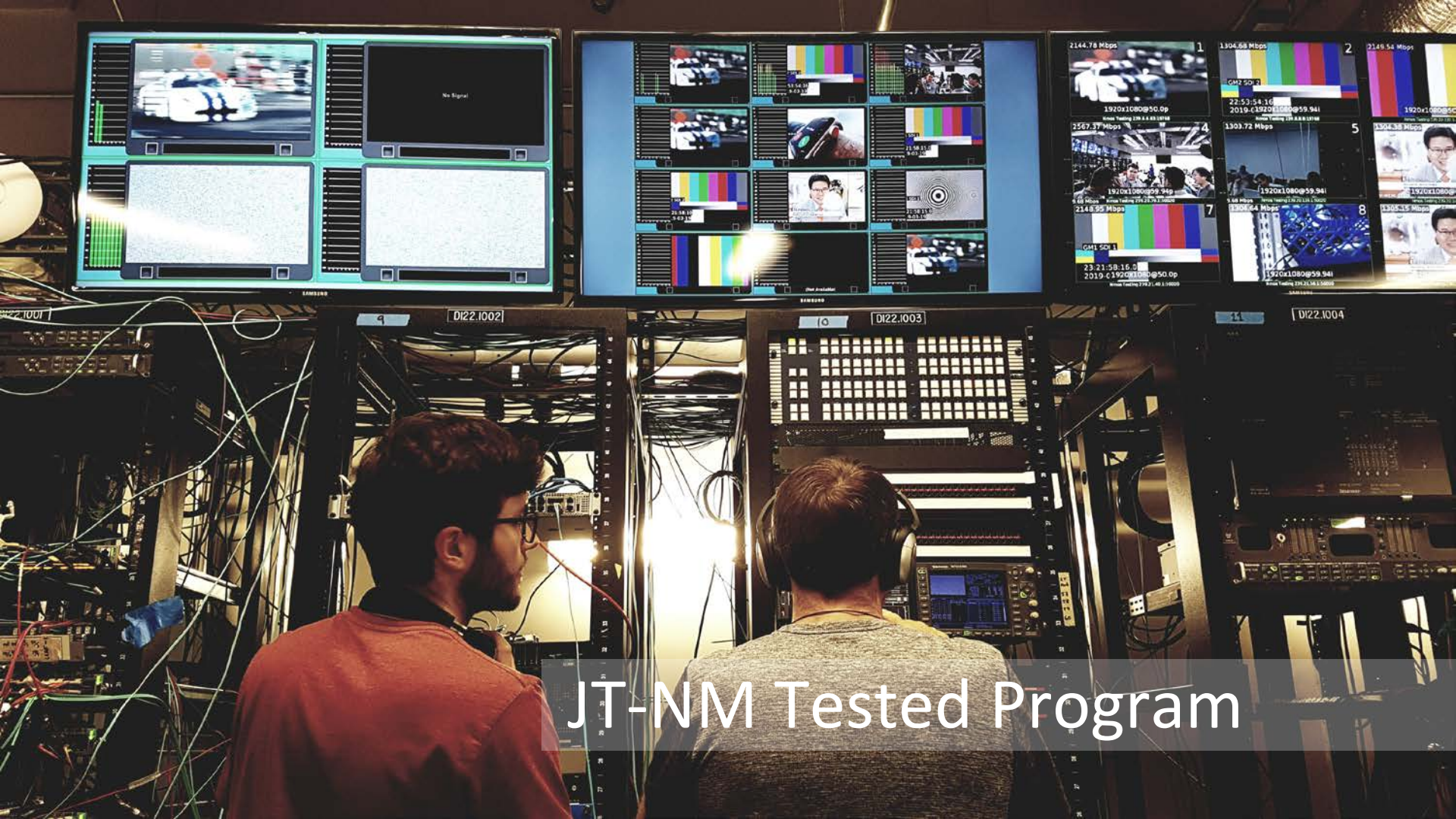
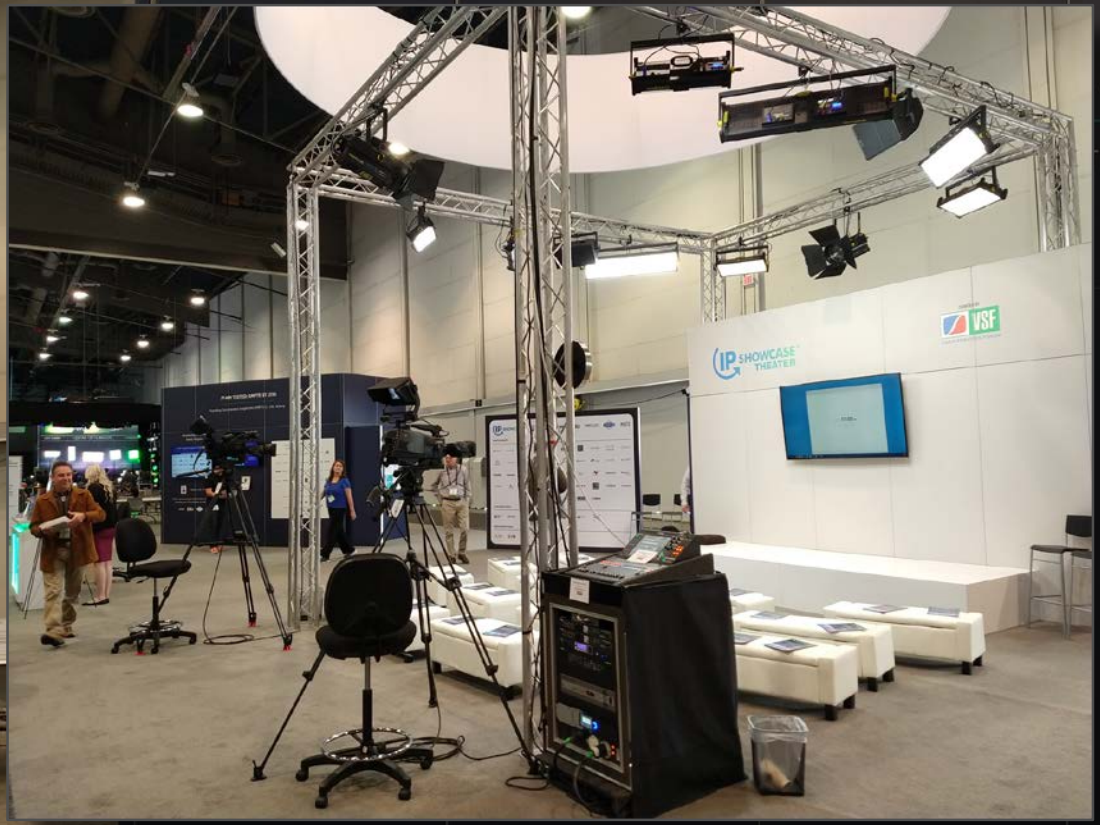


JT-NM Tested Program



NAB 2019

2110

2110 Testing

Participating Companies

The following companies have products listed in the JT-NM Tested Catalog for NAB 2019:

Organizations Responsible for Conducting Testing

EBU IRT

JT-NM Tested 2019

IBC 2019

Jetzt am, Markt verfügbare und zertifizierte IP-Produkte (mit der getesteten SW/FW-Version) mit den entsprechenden Buttons dokumentiert und an den jeweiligen Firmenständen gezeigt.

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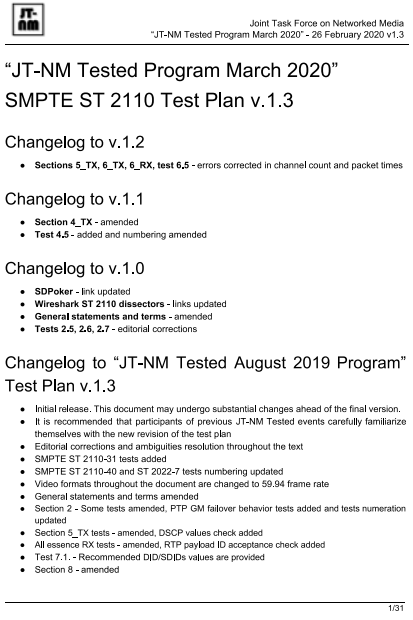
Weitere Informationsquellen: “JT-NM Tested Program”



Joint Task Force on Networked Media
“JT-NM Tested Program March 2020” - 26 February 2020 v1.3

“JT-NM Tested Program March 2020”
SMPTE ST 2110 Test Plan v.1.3

Changelog to v.1.2

- **Sections 5_TX, 6_TX, 6_RX, test 6,5 -** errors corrected in channel count and packet times

Changelog to v.1.1

- **Section 4_TX -** amended
- **Test 4.5 -** added and numbering amended

Changelog to v.1.0

- **SDPoker -** link updated
- **Wireshark ST 2110 dissectors -** links updated
- **General statements and terms -** amended
- **Tests 2.5, 2.6, 2.7 -** editorial corrections

Changelog to “JT-NM Tested August 2019 Program” Test Plan v.1.3

- Initial release. This document may undergo substantial changes ahead of the final version.
- It is recommended that participants of previous JT-NM Tested events carefully familiarize themselves with the new revision of the test plan
- Editorial corrections and ambiguities resolution throughout the text
- SMPTE ST 2110-31 tests added
- SMPTE ST 2110-40 and ST 2022-7 tests numbering updated
- Video formats throughout the document are changed to 59.94 frame rate
- General statements and terms amended
- Section 2 - Some tests amended, PTP GM failover behavior tests added and tests numeration updated
- Section 5_TX tests - amended, DSCP values check added
- All essence RX tests - amended, RTP payload ID acceptance check added
- Test 7.1. - Recommended DID/SDIDs values are provided
- Section 8 - amended

1/31

Mehr Informationen unter:
http://jt-nm.org/jt-nm_tested/

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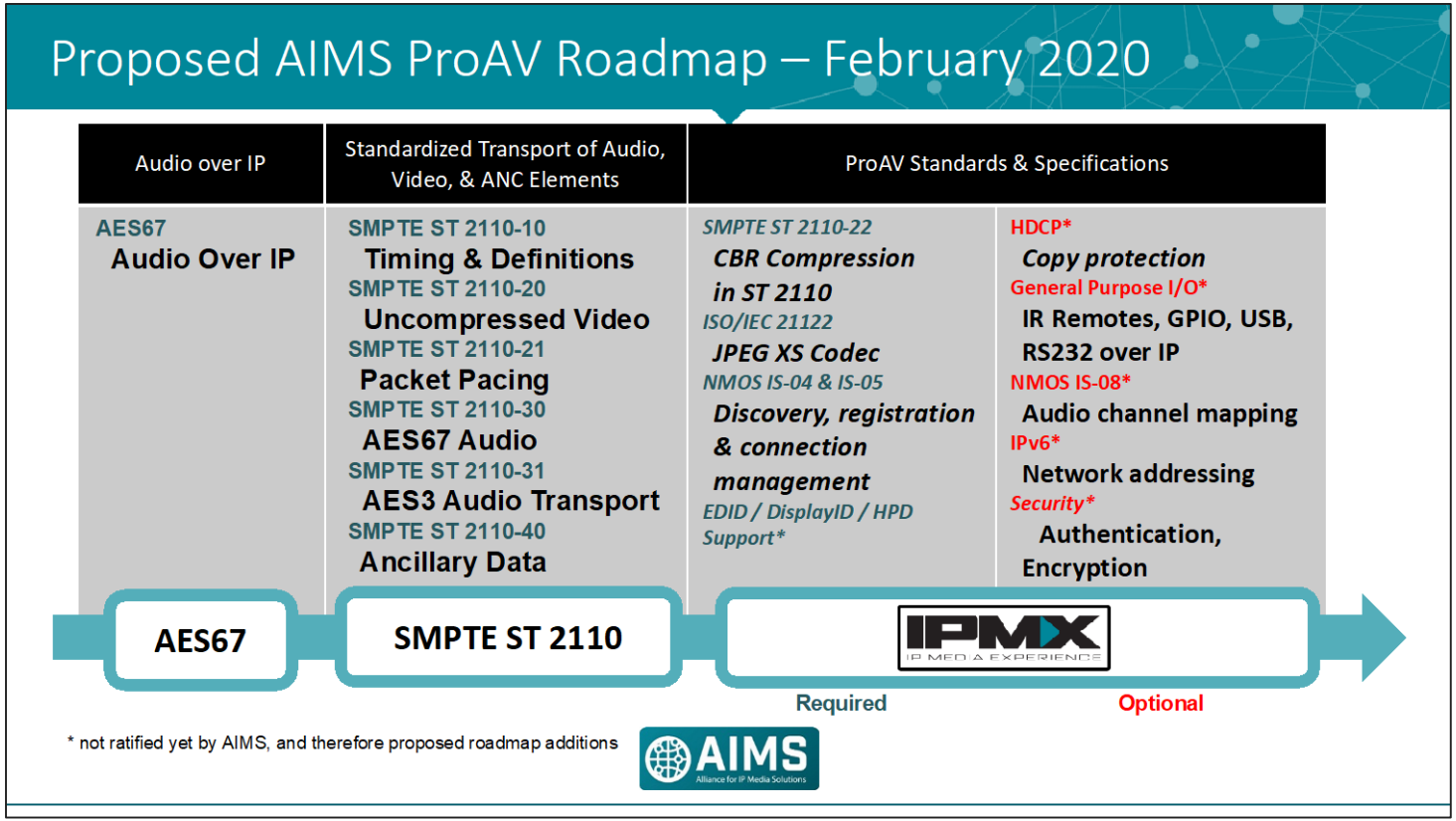
Trend: AIMS IPMX



AIMS: Alliance for IP Media Solutions

IPMX: Internet Protocol Media Experience

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Trends und Entwicklungen

Full Stack Profil weiterentwickeln

Remote Production – hier RIST/SRT/Zixi

Sicherheit – Security is a thing!

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Trend: RIST/SRT/ZiXi

Ziel: Standardisierte Anlieferung von Live content (low delay) über öffentliche bzw. "unmanaged" Netzwerke (z.B. Public Internet über DSL, LTE/5G, Satellite)

RIST

- Reliable Internet Streaming Protocol
- Standardisiert von VSF
- RTP, RTCP
- Interoperabel designt

SRT

- Secure Reliable Transport
- Entwickelt von SRT Alliance
- Implementierung Open Source

ZiXi

- ZiXi
- Proprietär
- Etabliert

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Potentielle Rundfunkanwendungen

Professionelles Video Streaming für

Kontribution:

- Anbindung der AÜ, Regional- und Auslandsstudios

Primary Distribution

- Senderzuführung
- Upload für Videoportale

Von / Zur Cloud

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Tests SRT

Hochaktuell: Tests mit SRT im IRT im Februar/März 2020

- Über Internet, LTE und Ka-Sat
- Mehrere Hersteller

Zwischeneindruck (unter Vorbehalt):

- Robust

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Trends und Entwicklungen

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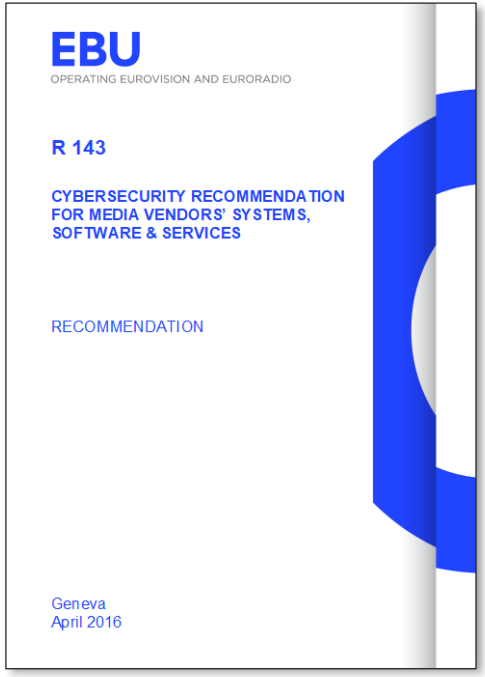
Trend und Entwicklung: Security



IT – Sicherheit ist essentiell!

Passwörter im Klartext im Handbuch

Undokumentierte offene Ports

Don't!

Immer mehr wird Security unterstützt

EBU Recommendation R143, nützlich

NMOS z.B. nutzt TLS, https, wss

Do!

EBU R143 - CYBERSECURITY RECOMMENDATION:
https://tech.ebu.ch/publications/r143

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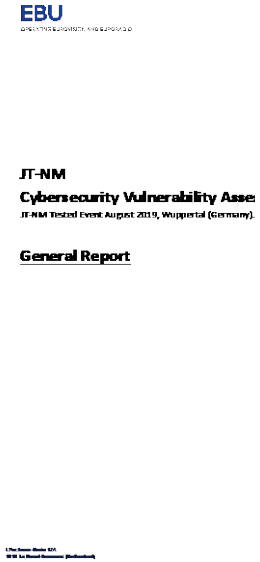
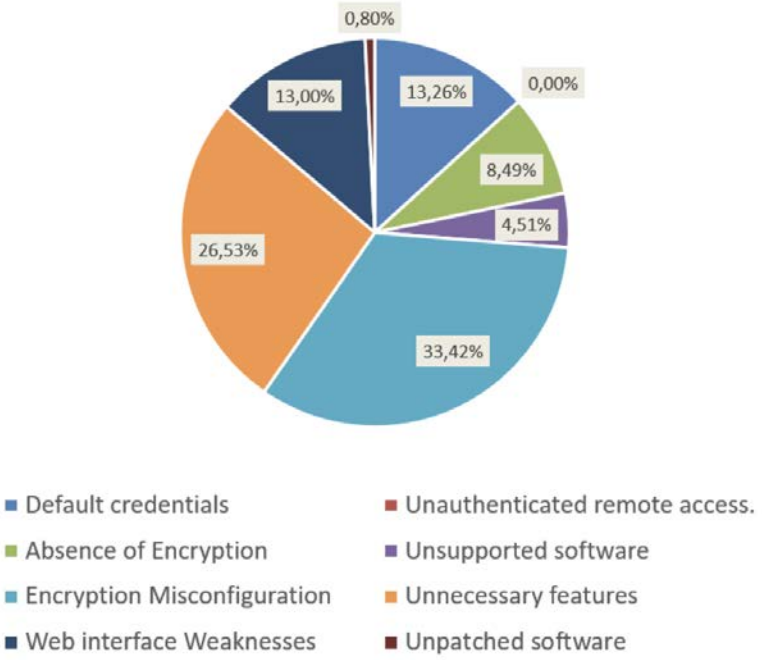
Trends und Entwicklung: Security





Geräte von 34 Herstellern getestet

387 Schwachstellen gefunden

16% davon kritisch

JT-NM CYBERSECURITY VULNERABILITY ASSESSMENT:
http://jt-nm.org/documents/security/jt-nm_cybersecurity_final_report_2020_02_26.pdf

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Die Technologiewelten wachsen zusammen

IBC 2019

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Vielen Dank für Ihre Aufmerksamkeit!

Experts in audio-visual media

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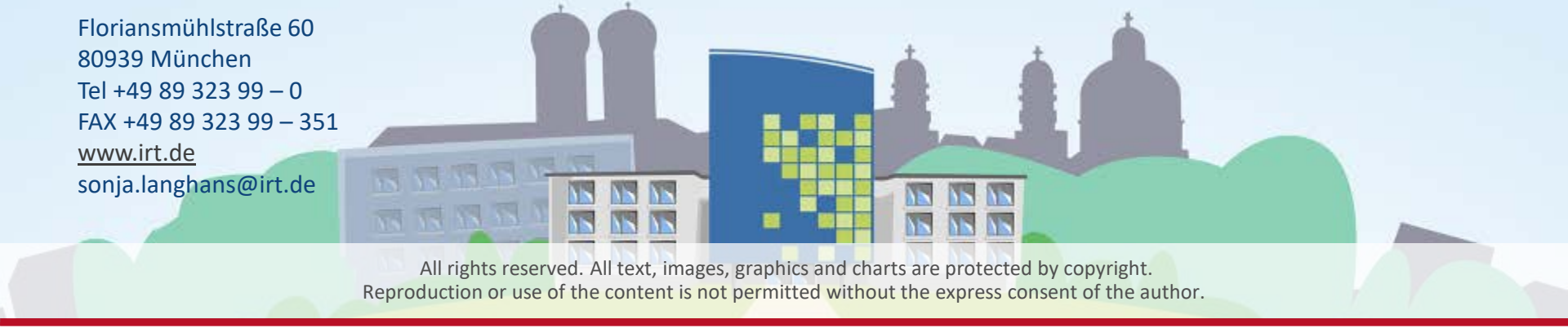

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