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ZONE CABLING

Are we ready?

ΑΙΓ ΜΕ ΙΕΑΘΥ;

SOME CABLING

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THE EDGE





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CONNECTED BUILDINGS ARE HERE





AGENDA

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- ★ NEW CHALLENGES
- ★ DESIGN DRIVERS
- ★ STANDARDS
- ★ ANSI BICSI STANDARDS FOR IB
- ★ CHANGE – DIGITAL TRANSFORMATION
- ★ THE DIGITAL CEILING
- ★ HOW TO DO ZONE CABLING
- ★ CONCLUSION
- ★ ADVICE



IN THE
ZONE



SMART vs. INTELLIGENT

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- **Smart:** Performing actions based on direct input of information or data
- **Intelligent:** Performing actions based on common sense, experience, and the ability to adapt, taking **context** into account





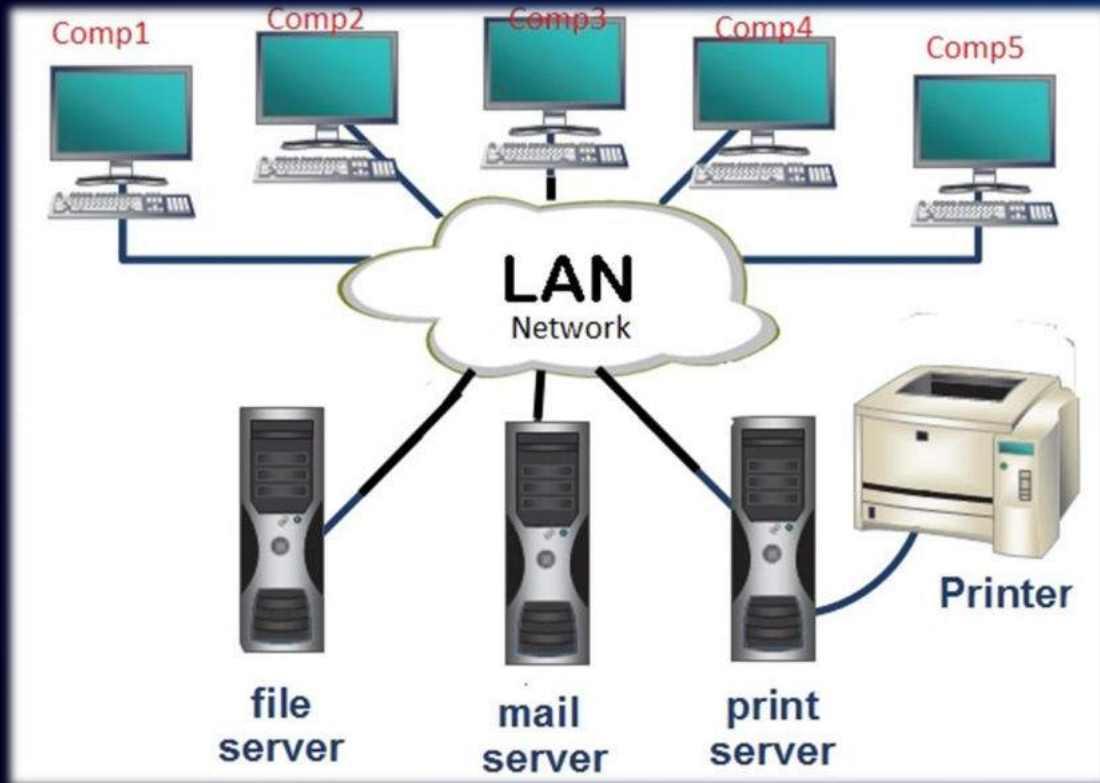
Structured Cabling

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DESIGN DRIVERS

★ „OLD“ thinking



★ „NEW“ thinking



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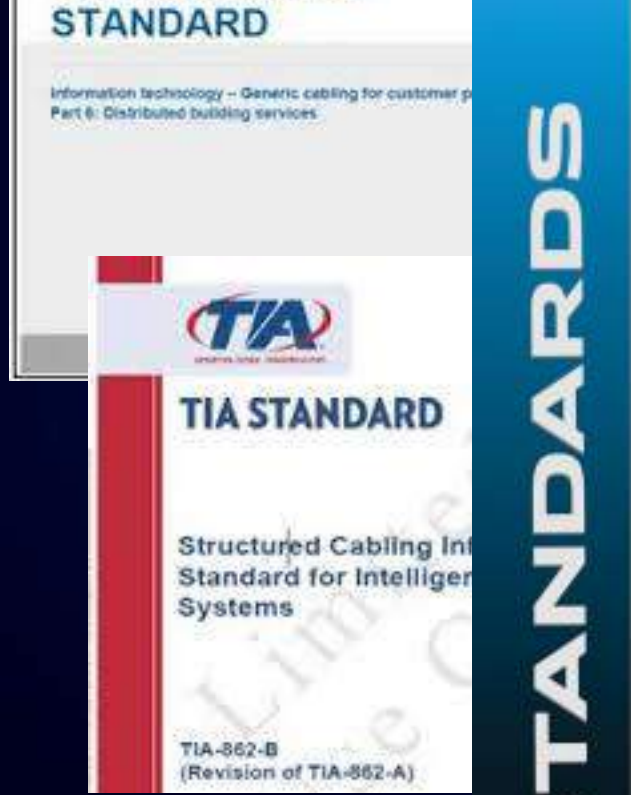


STANDARDS

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★ ISO/IEC 11801-6 2017 Part 6: „Distributed building services“



★ ANSI/TIA-862-B „Structured Cabling Infrastructure Standard for Intelligent Building Systems “



★ TIA TSB-184-A 2017 ISO29125 „Supporting Power Delivery Over Balanced Twisted-Pair Cabling“

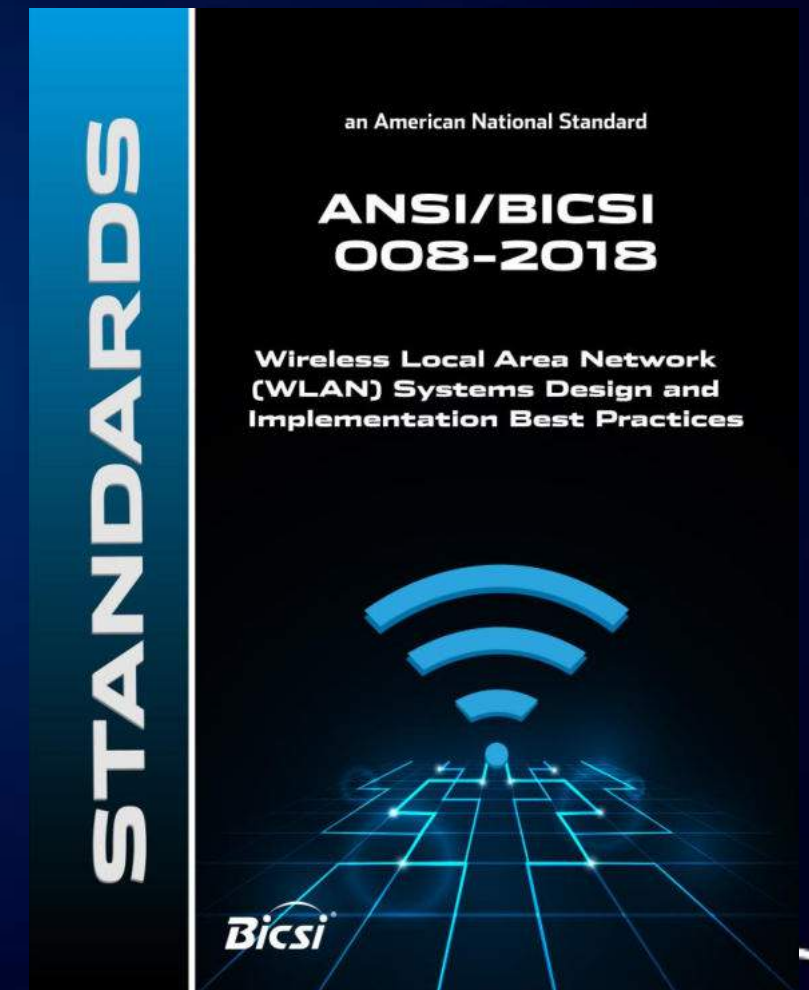
★ ANSI/BICSI-ANSI/BICSI 007-2017 „Information Communication Technology Design and Implementation Practices for Intelligent Buildings and Premises“





ANSI/BICSI STANDARDS FOR CONNECTED BUILDINGS

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CHANGE



75% COMPLETE

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• PoE

- DC in the last mile
- PoE - 100W per port
- LED lightning
- TV sets (HDBase-T)
- Mobile devices
- Small home appliances
- Even fridges
- ...

• IoT

- Sensors
- Actuators
- Cameras
- Wearables
- Vehicles
- Drones
- Tools
- WiFi 6
- ...

• 5G

- VR
- AR
- Surveillance
- Games
- Shopping
- Netflix
- Control
- Management
- Healing / Repairing
- ...

• BIG DATA

- Catch
- Analyze
- LEARN
- Store
- Search
- Share
- Exchange
- Refresh
- Use
- ...





HOW DOES IT TANGLES US

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- **LIFE**

- Smart City
- Smart Street
- Smart Shop
- Smart Home
- Smart Car
- Smart Wearables
- Smart Kids
- Smart Pets
- Smart Healthcare
- Smart Life

- **INDUSTRY**

- Smart Factory
- Smart Floor
- Smart Machine
- Smart Tool
- Smart Product
- Smart Warehouse
- Smart Delivery
- Smart Production

- **WORK**

- Smart Building
- Smart Office
- Smart Desk
- Smart Chair
- Smart Work



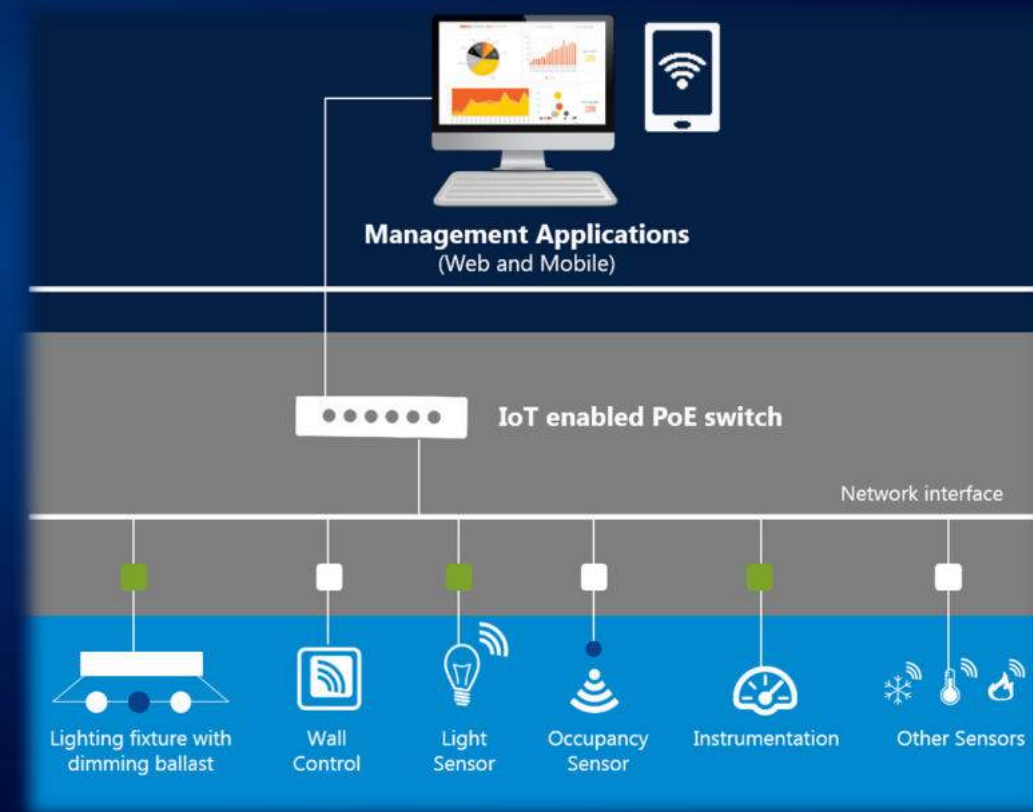
WHAT'S OUR VECTOR VICTOR



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- ★ MORE REACH – 1km 10Mbps Single Pair Ethernet
- ★ MORE DEVICES – „Sensor“ Ethernet
- ★ MORE SPEED – Multi-Ethernet
- ★ MORE POWER – Different PDs
- ★ MORE PORTS – Number is multiplying
- ★ MORE SERVICES – IoT
- ★ MORE APPLICATIONS - IoT
- ★ MORE QUALITY CABLING

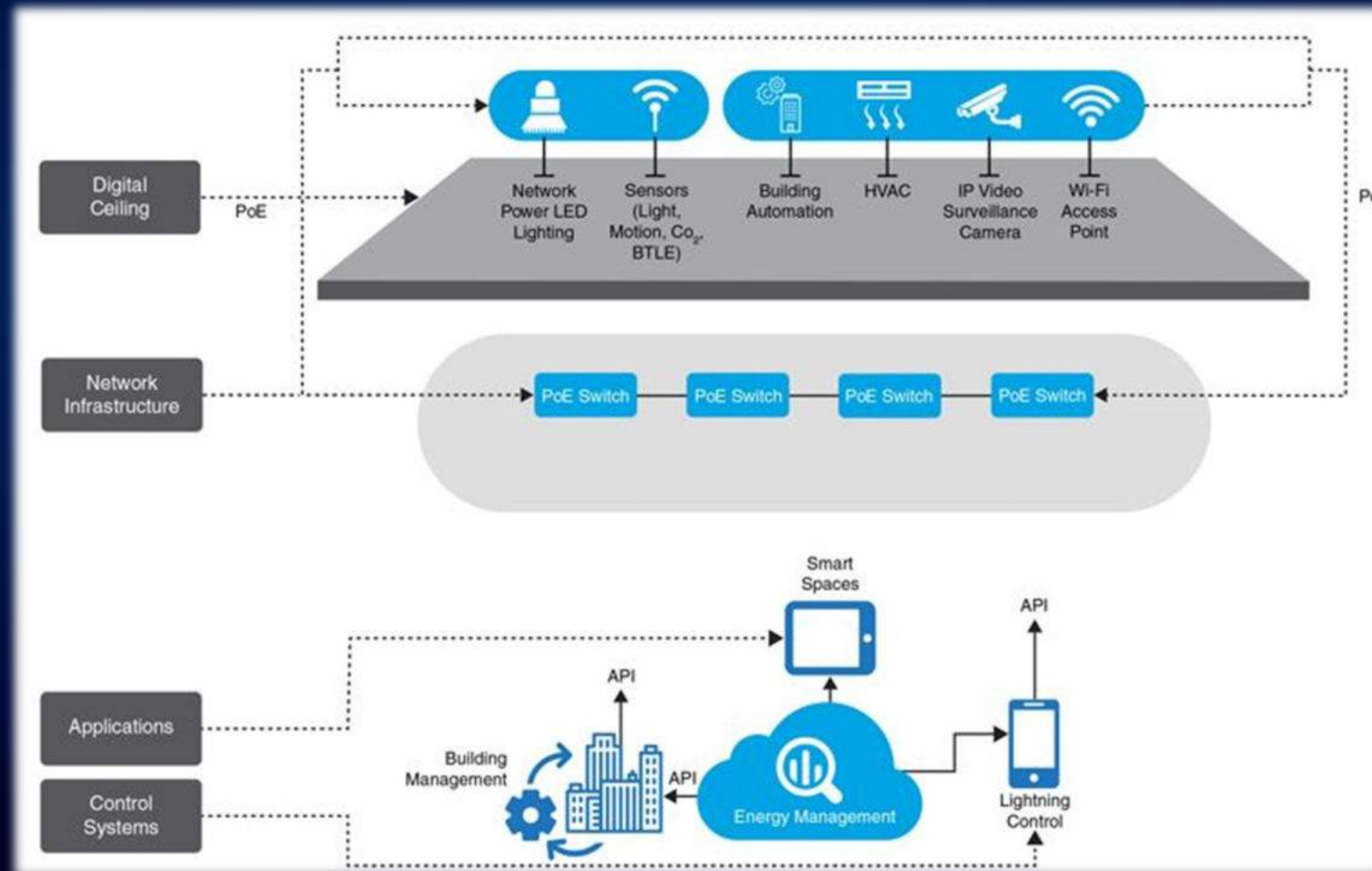


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THE DIGITAL CEILING

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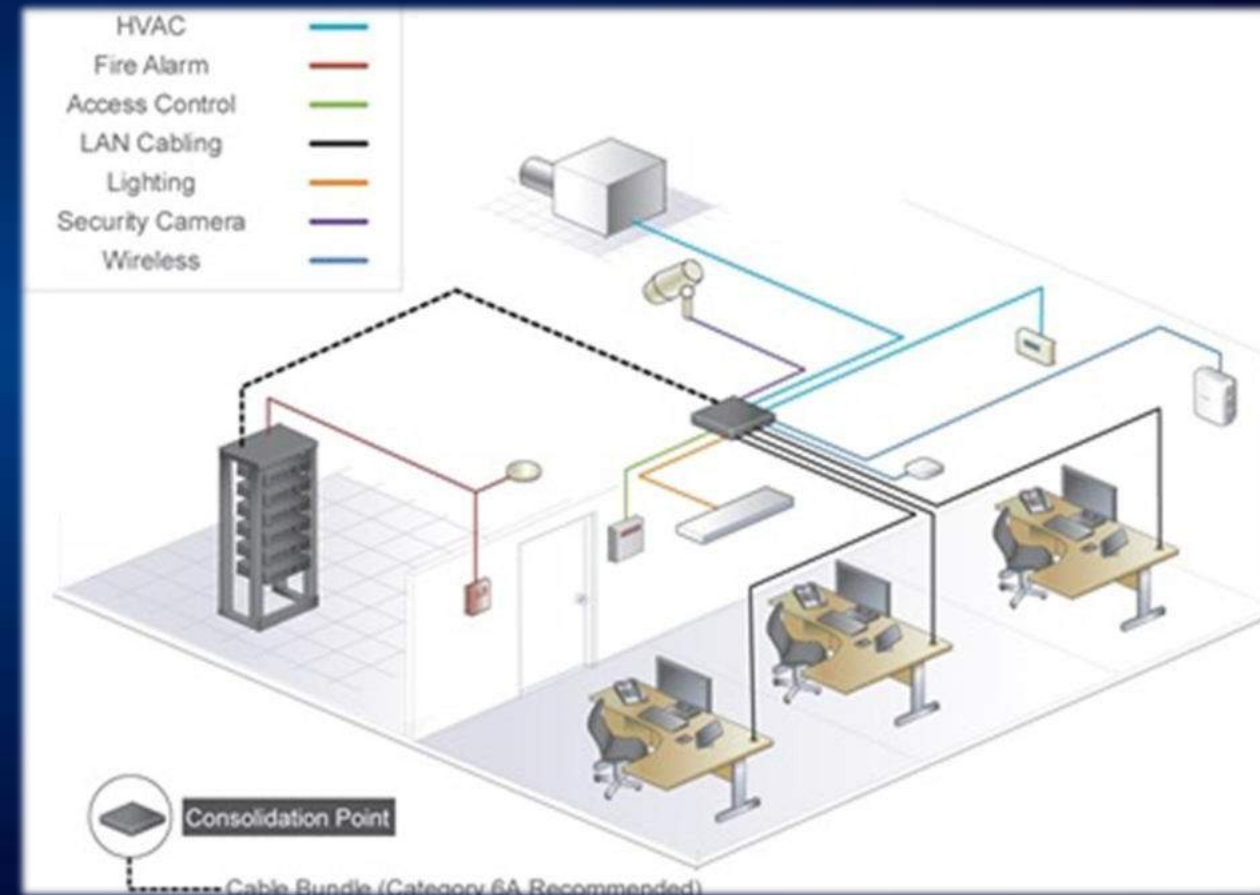
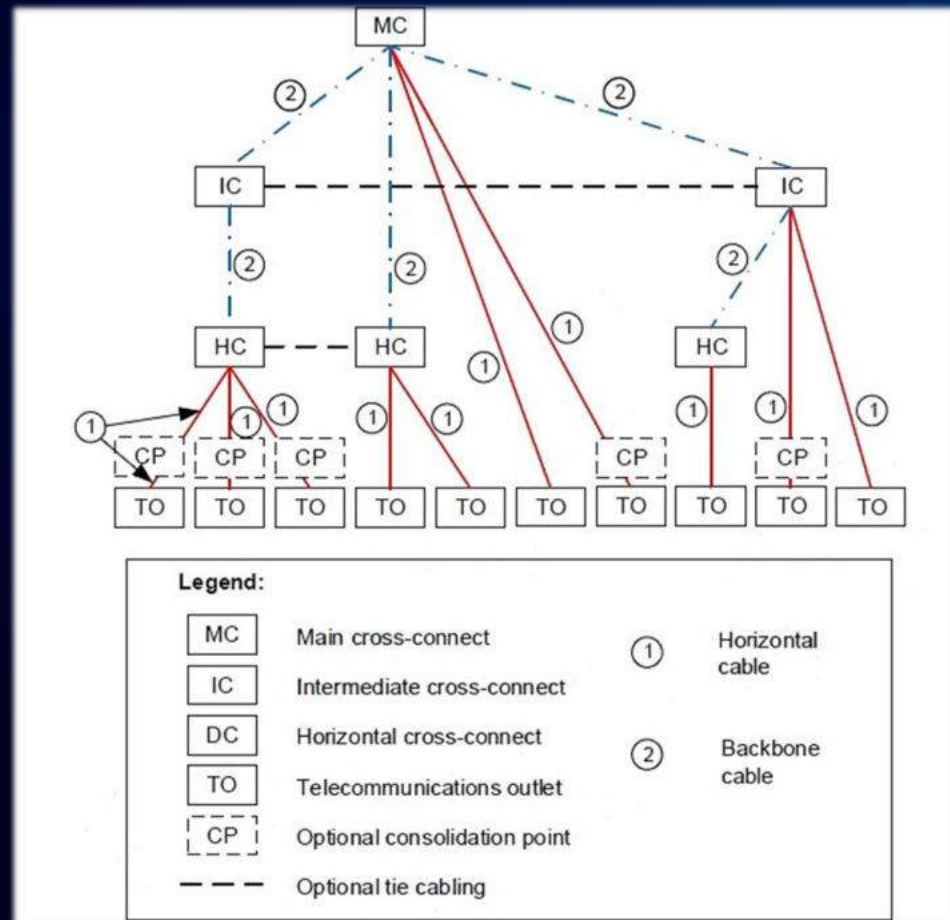




#ZONECABLING

Fully Integrated IoT Network

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BENEFITS

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- ★ FLEXIBILITY
- ★ IDEAL FOR SHELL & CORE - BUSINESS & INDUSTRIAL
- ★ MAC FRIENDLY – FLOOR LAYOUT
- ★ LESS INSTALLATION TIME
- ★ USE OF PRECONNECTORIZED COPPER OR FIBER CABLING
- ★ ACTIVE OR PASSIVE CP
- ★ OPTIMIZING TOTAL COST – LESS CAPEX or TOTAL OPEX
- ★ REDUCING FIRE LOADS





Design Approaches

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★ HEXAGON DEPLOYMENT PATTERN

Large open spaces – office, industrial, warehouse, shopping malls

Up to 96 ports

4-5 „hexes“ each of 425 m²

Total 2000 m²

★ GRID DEPLOYMENT PATTERN

Large spaces - Schools, Universities, Hospitals

4 „squares“ each of 340 m²

Total 1400 m²

★ LEG DEPLOYMENT PATTERN

Small spaces – part of objects

24-96 ports

4 „squares“ each of 340 m²

Total 1400 m²

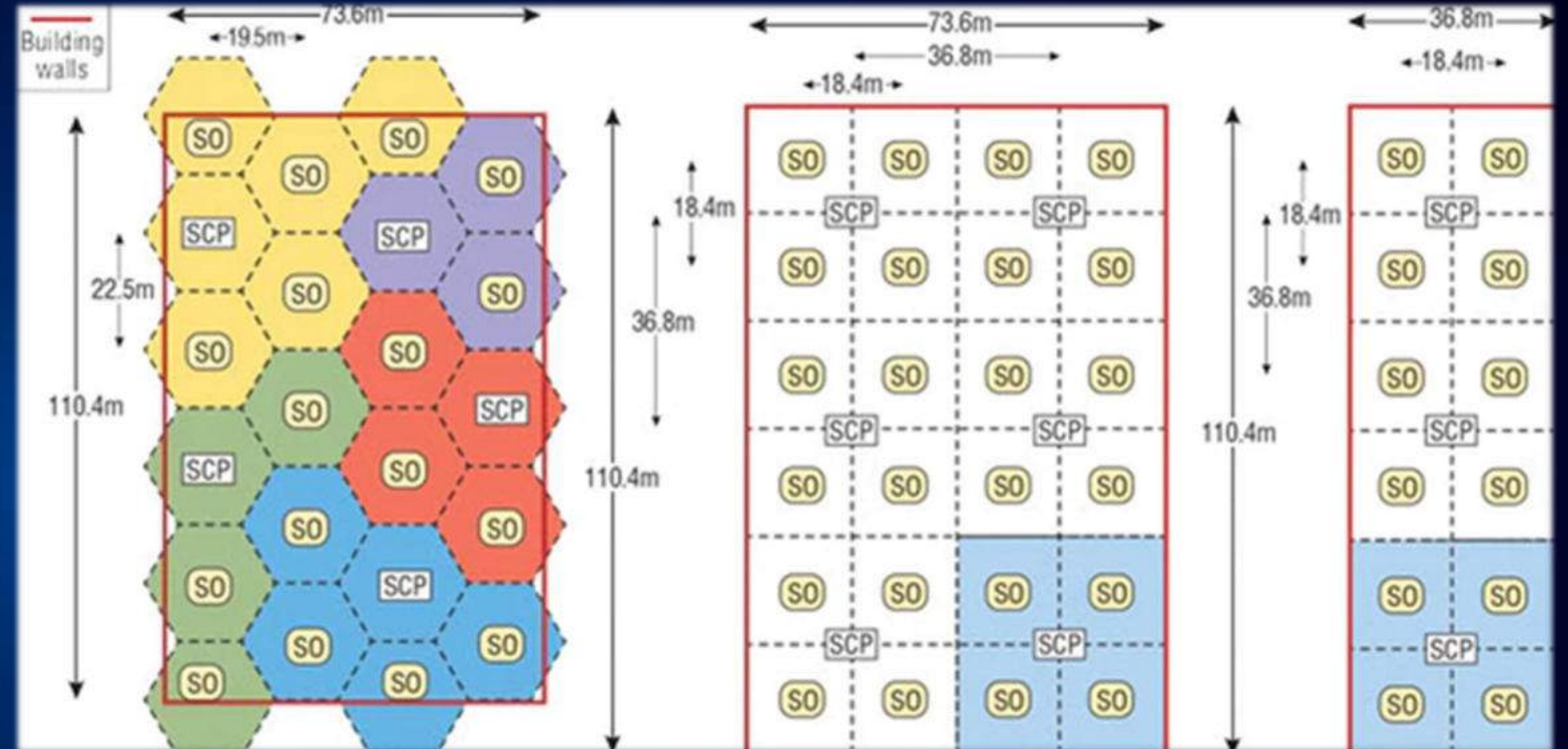


TABLE 2: Typical building device density

Use of floor space	Coverage area per building device (m ²)	Number of connections in the SCP required per 2000m ² (hexagon pattern) ^a		Number of connections in the SCP required per 1400m ² (grid pattern) ^b	
		Minimum	Recommended	Minimum	Recommended
Classroom, data center, hospital, hotel, office, retail, or indoor parking ^c	25	80	96	56	72
Manufacturing	50	40	48	28	36

a) Each SCP is assumed to support four to five 425m² hexagon-shaped coverage areas for a total maximum usable space of 2000m².

b) Each SCP is assumed to support four 350m² square-shaped coverage areas for a total of 1400m².

c) ANSI/TIA-862-B provides an estimate coverage area per building device of 50m² for indoor parking application.



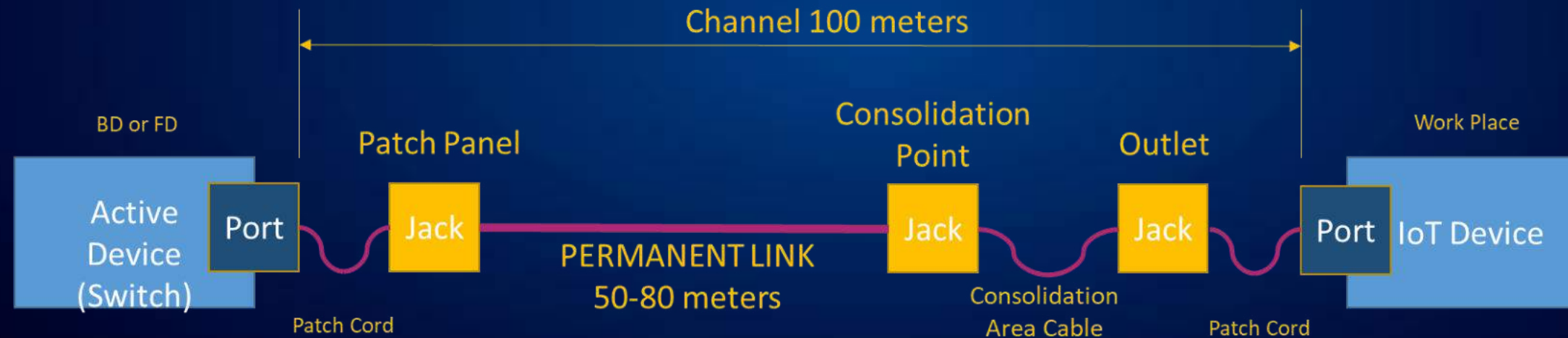


FUNDAMENTALS OF ZONE CABLING

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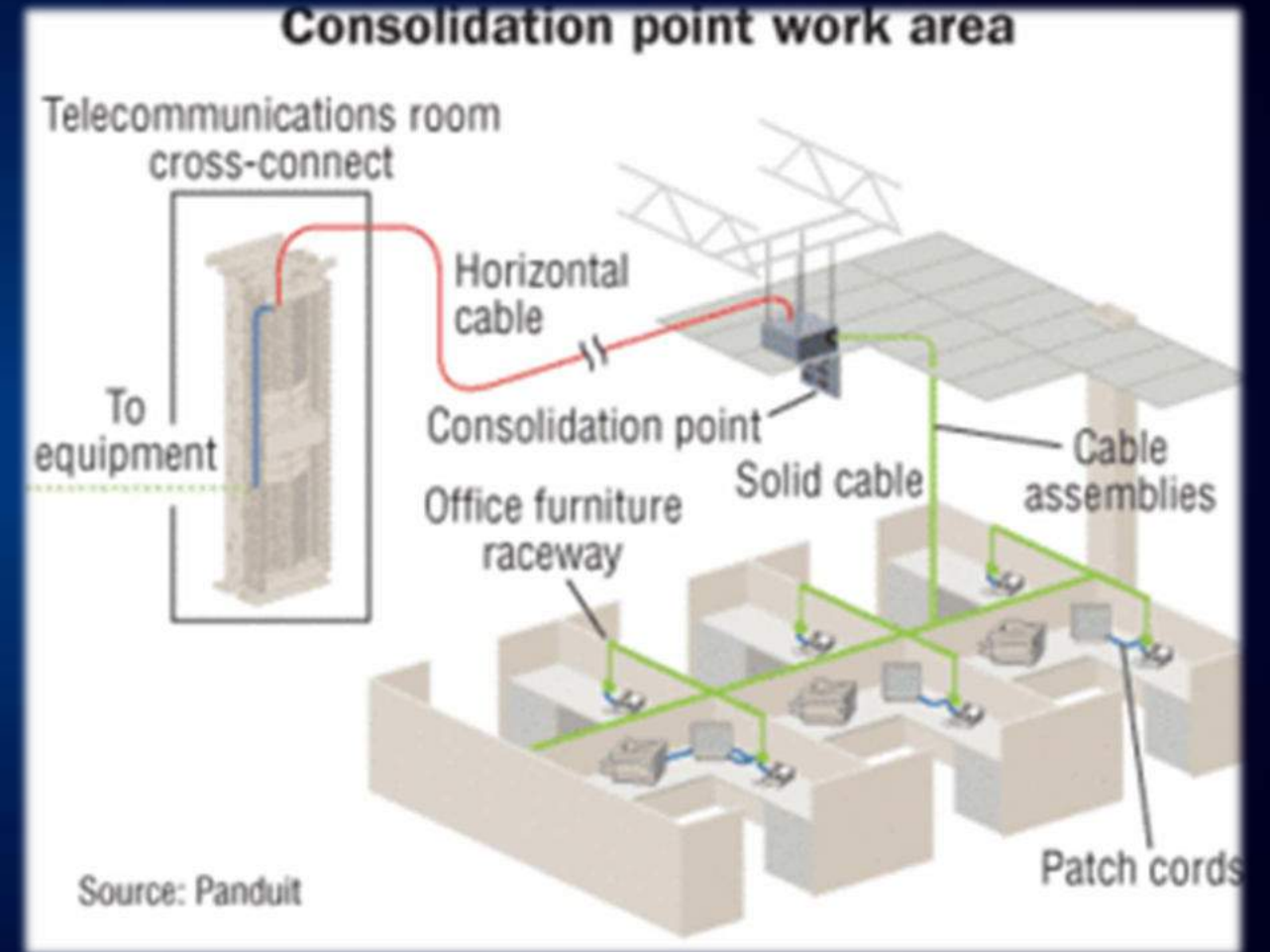
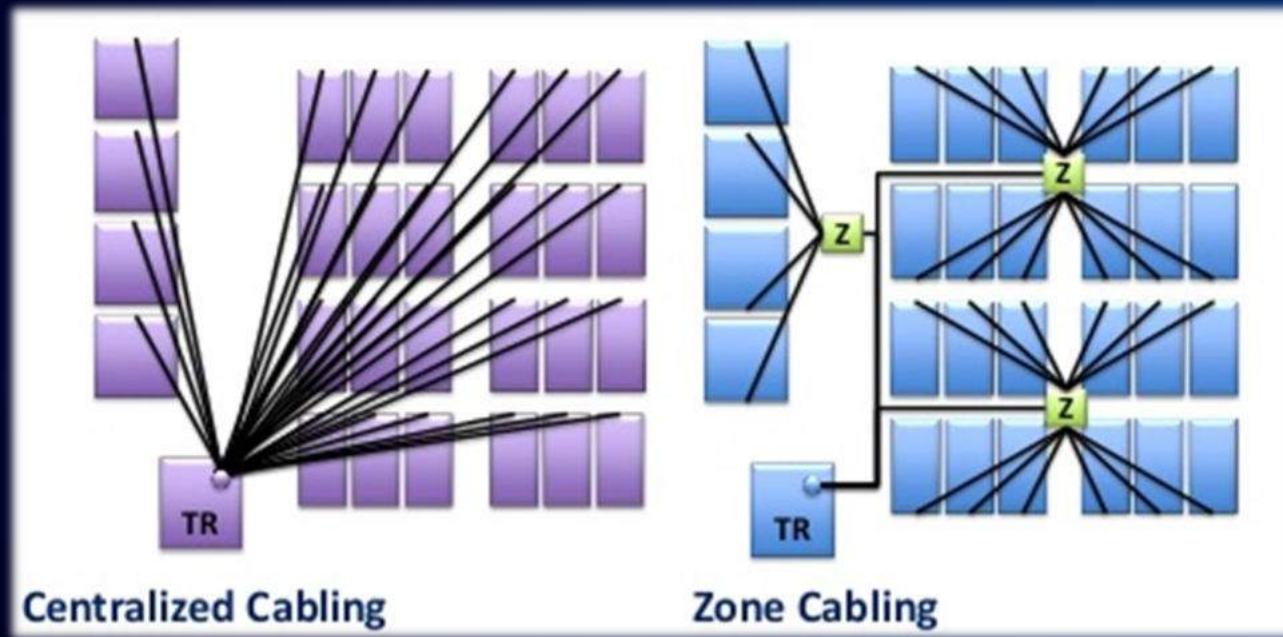
★ 3 CONNECTOR CHANNEL





NETWORK TOPOLOGY

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SCP or HCP or CP

Do you know
the difference?

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★ ANSI/BICSI 007-2017
Intelligent Building Systems

- ★ HCP
- ★ PASSIVE
- ★ SERVICE AREA / SERVICE OUTLET
- ★ SOLID COPPER CABLE TO THE CP
- ★ WALL CABLE FROM CP TO OUTLET
- ★ 1, 2.5, 5, 10 GbE – at the moment
- ★ 25/40 GbE - future
- ★ INDIVIDUAL COPPER CABLE OR
- ★ PRETERM COPPER CABLE BUNDLES

★ ISO/IEC 11801-6
Distributed Building Services

- ★ SCP
- ★ PASSIVE
- ★ SERVICE AREA / SERVICE OUTLET
- ★ SOLID COPPER CABLE TO THE CP
- ★ WALL CABLE FROM CP TO OUTLET
- ★ 1, 2.5, 5, 10 GbE – at the moment
- ★ Class EA, Class F, Class FA
- ★ INDIVIDUAL COPPER CABLE OR
- ★ PRETERM COPPER CABLE BUNDLES

★ TIA/EIA-568-B.1
Open Office Cabling (ZONE)

- ★ CP
- ★ PASIVE
- ★ TELECOM OUTLET - WORK AREA OUTLET
- ★ SOLID COPPER CABLE TO THE CP
- ★ WALL CABLE FROM CP TO OUTLET
- ★ 1, 2.5, 5, 10 GbE – at the moment
- ★ 25/40 GbE - future
- ★ INDIVIDUAL COPPER CABLE OR
- ★ PRETERM COPPER CABLE BUNDLES

★ ANSI/TIA/EIA-862-Bx : 2017
Building Automation Systems

- ★ HCP
- ★ PASSIVE
- ★ COVERAGE AREA
- ★ SOLID COPPER CABLE TO THE CP
- ★ WALL CABLE FROM CP TO OUTLET
- ★ 1, 2.5, 5, 10 GbE
- ★ 25/40 GbE
- ★ Cat.6, Cat.6A, Cat.8
- ★ INDIVIDUAL COPPER CABLE OR
- ★ PRETERM COPPER CABLE BUNDLES

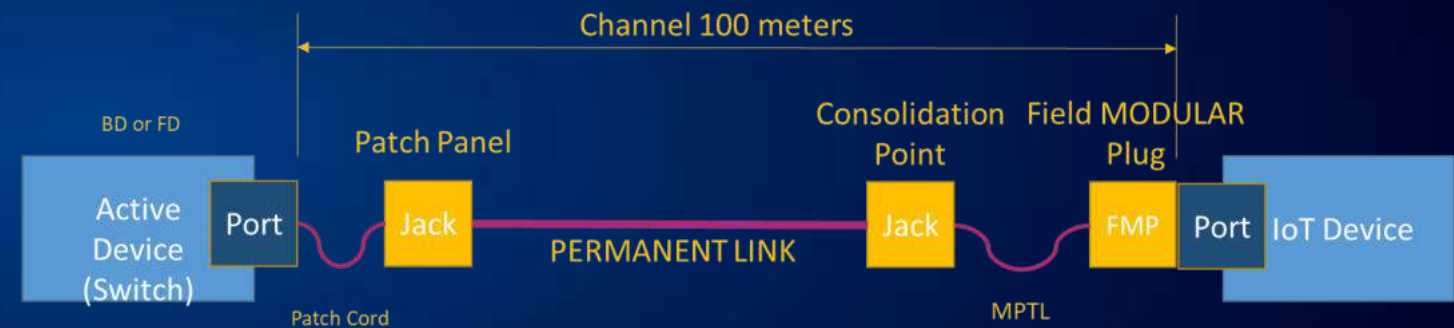




ONE MORE THING

ANSI-TIA568.2-D standard - new link model named Modular Plug Terminated Link – MPTL

- ★ THIS IS NOT ZONE CABLING –
- ★ THIS IS MUTOA (TIA) or MUTO (ISO)
- ★ MAX LENGTH OF THE CABLE AFTER CP IS 20 meters



- ★ ISO IS DRAFTING MPTL: ISO/IEC TR 11801-9910





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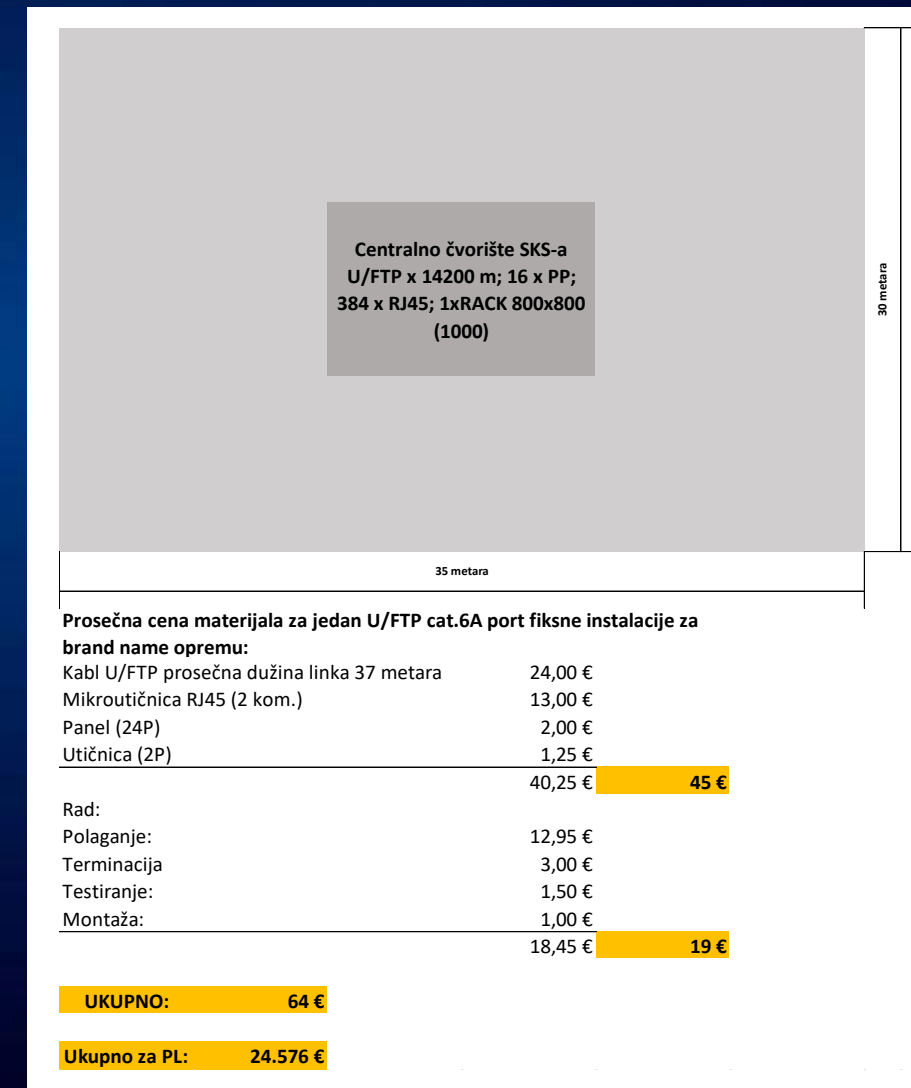
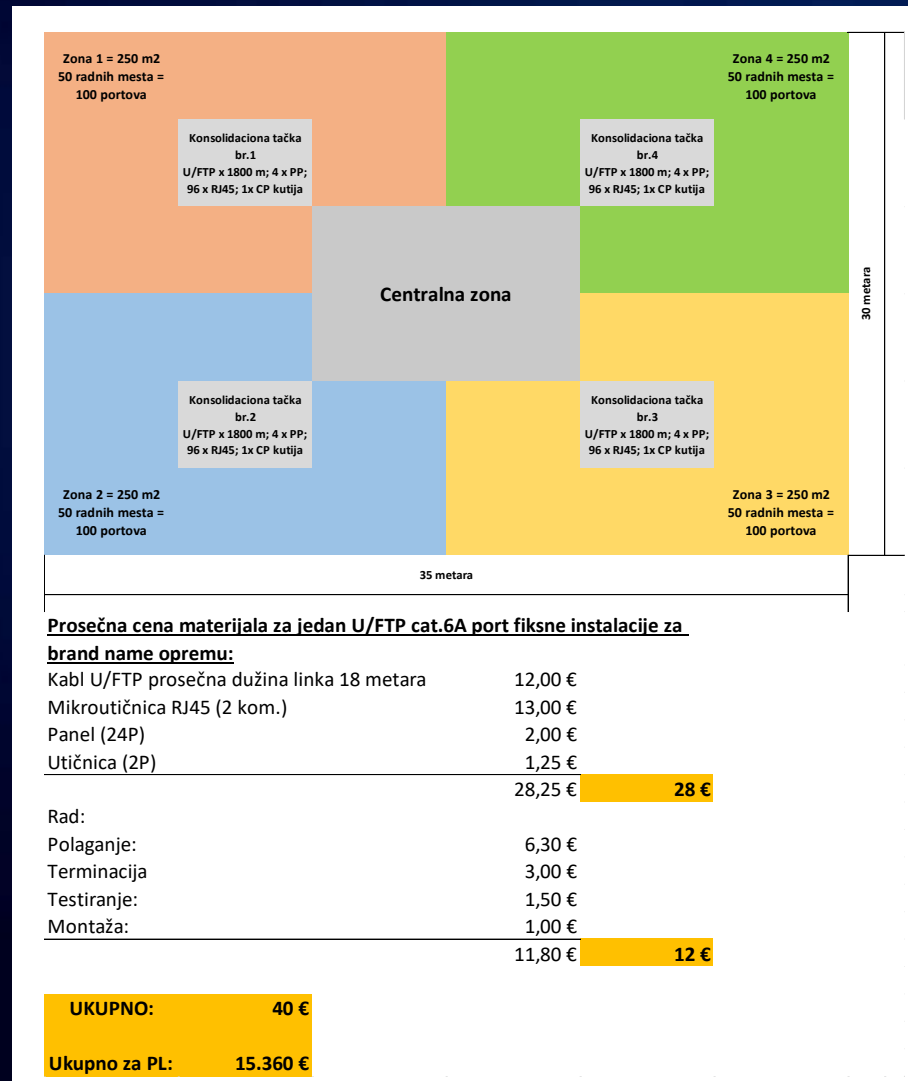


WARNING

- ★ IF YOU MAKE IT ACTIVE and put a switch inside – IT'S NOT A CP, it's not a ZONE CABLING
- ★ It is FD, but it could be SCP/HCP, in a different way
- ★ Any way it could be a good approach to the DIGITAL CEILING when applying 25 or 40 Gig to the HCP
- ★ You can use cat.8.2 or MM fiber
- ★ Use of industrial fan-less switches
- ★ ...



EXAMPLE: ZONE vs CENTRALIZED





THE WINNER

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Projekat	
Usvojene osnovne pretpostvke:	
1 Vrsta objekta	Poslovni
2 Tip	Open space koncept / FD u
3 Spratnost	-2+P+6
4 Neto površina osnove	1000 m2
5 Prostorija za centralno čvorište SS	Ima; 6 sprat
6 Rezervna prostorija za SS	Ima; nivo -1
7 Spratna čvorišta SS	Ima; 1/nivou smešteno u
Centralizovano rešenje - predmer i predračun po spratu kancelarijskog prostora	
1 Broj radnih mesta po etaži	200
2 Broj portova po etaži	400
3 Rezerva (min 10%)	40
UKUPNO Portova:	440
4 Prosečna dužina linka (metara)	37
5 Ukupno kabela:	16280
6 Usvaja se (pakovanje 500m):	16000
UKUPNO kabela za 6 etaža (m):	96000
Zonsko rešenje - predmer i predračun po spratu kancelarijskog prostora	
1 Broj radnih mesta po etaži	200
2 Broj portova po etaži	400
3 Rezerva (min 10%)	40
UKUPNO Portova:	440
4 Prosečna dužina linka (metara)	18
5 Ukupno kabela:	7920
6 Usvaja se (pakovanje 500m):	8000
UKUPNO kabela za 6 etaža (m):	48000
RAZLIKA U INVESTICIJI:	48000
Pretpostavljena tržišna cena kabela bez PDV:	0,65 €
Pretpostavljena tržišna cena polaganja kabela bez PDV:	0,35 €
Inicijalna investiciona vrednost:	48.000,00 €



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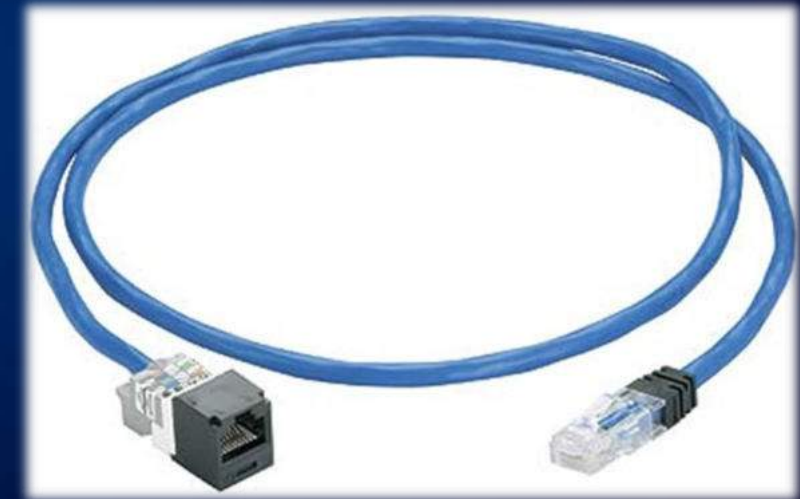


CONSOLIDATION AREA CORD

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- ★ JACK to PLUG – F to M min 5, max 25 meters long
- ★ PLUG to PLUG – M to M min 5 – max 25 meters long
- ★ For Digital Ceiling and Floor – IT MUST BE CPR RATED





FLOOR CP OPTIONS

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CEILING CP

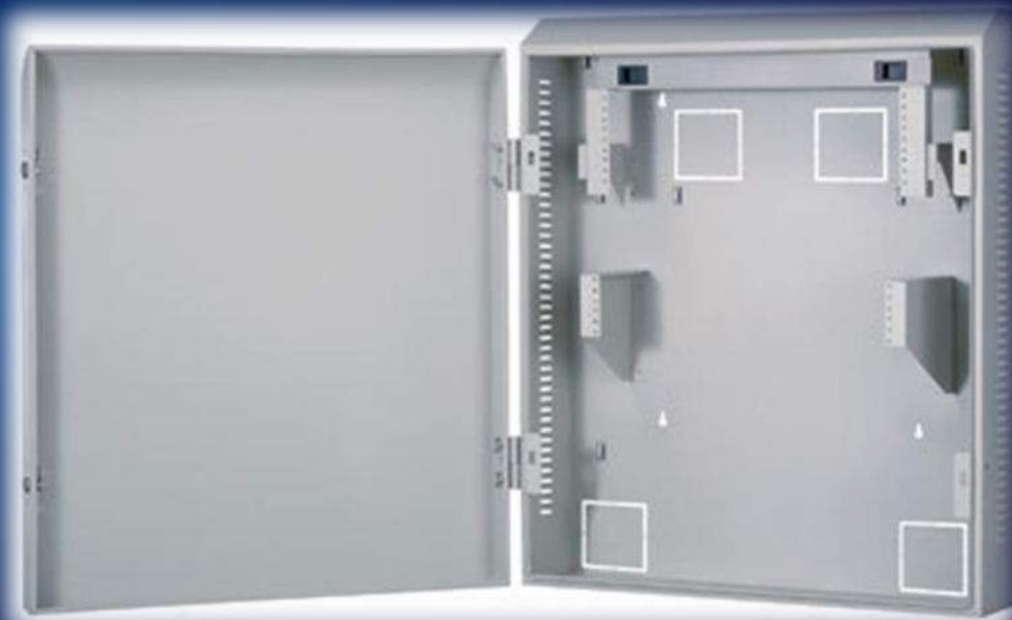
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WALL CP

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CONCLUSION

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One Size
Does Not Fit All



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Follow

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- ★ KNOWLEDGE
- ★ RESPONSIBILITY
- ★ BEST PRACTICE
- ★ EXPERTISE

- ★ RISK
- ★ UNRESPONSIBILITY
- ★ CUTTING THE CORNERS



SLEEP TIGHT WITH **Bicsi**



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**KEEP
CALM
AND
GET IN
THE ZONE**





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ΕΥΧΑΡΙΣΤΩ ΠΟΛΥ

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