

Introduzione al Building Information Modeling: una evoluzione necessaria, un processo fattibile.



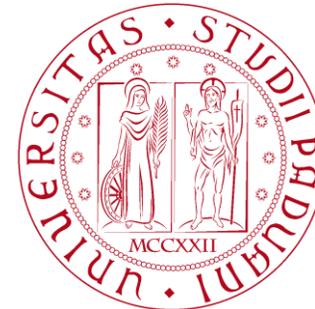
Carlo Zanchetta

Università degli Studi di Padova

Ricercatore

carlo.zanchetta@unipd.it

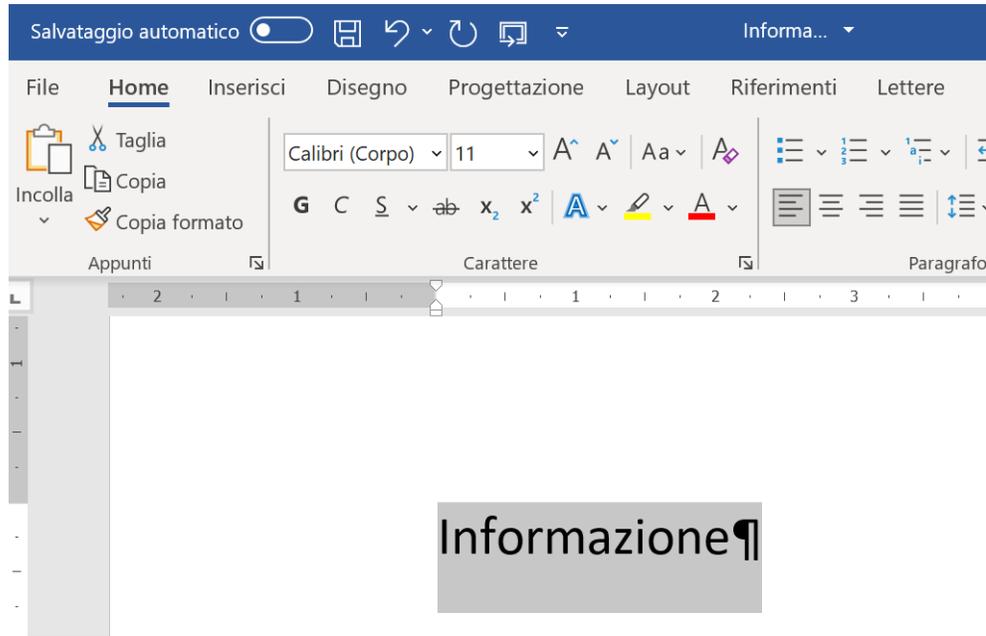
 it.linkedin.com/pub/carlo-zanchetta



UNIVERSITÀ
DEGLI STUDI
DI PADOVA

P1: Dal dato, al modello, al documento

.doc



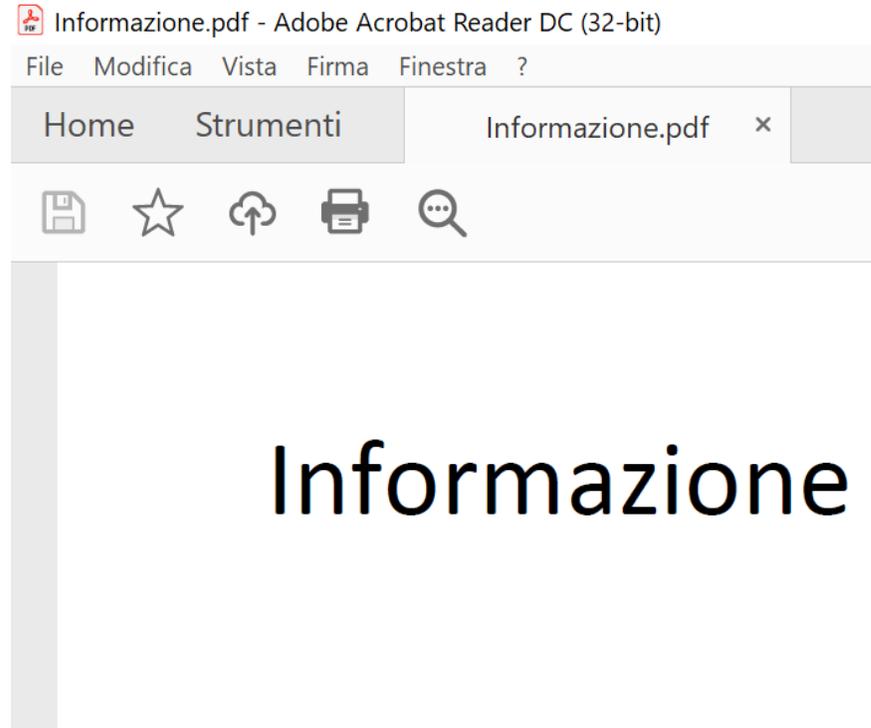
.txt

Informazione - Blocco note di Windows

File Modifica Formato Visualizza ?

Informazione

.pdf



Informazione

49 stream
50 xœi}BET|U°p9B7-3"IL2I&™\$3Ã=NU|SOHB'SOH\$CSUB%tCAN&PDC3RBSUB ÒÀAXNU|biNAR]·|LACK" `E×¶ò×,«@@B[EBOI|pùB9DLE_ëuyí]^-÷?òòíóœ+`iò÷;øKFFaEL;>t-°¼±lÚ; 'XEM/vÀ±µ+d\éÙ×.ú`návETÓÀ@ENOÿ`{dðçÈñ°Q
51 c-zQ|úÁŠUí)ásPD~#Ê{ETBÖ/<`¹úE-+CAN/¼USé°SYNÖ,~¿bÁwsEM·-b-iòæÁK-u°UFÊ+}.Ê7/©ONSß-±µÍxÜgLi...æžo>ZW8×6ú;-fbÁiúli3, US°raÁETX+Za>7
52 F2Ž)EFFFcFF-fnGí[SORSB°`sis-¥.-v>ð,{°SYNfgã™ššvVÀ61-8CANIUœúo...LlÍLúò&ETX&gSYN±úSTXÚ"0DC3SlzEQT°`çúòéúí°`OòzNUTESC?òèeSOHESO°ÓBEL|äöJø-fN`Sì0`^`2S.áHoøóíwešŽÿpínóðúç¿ÍR<@Bb÷ýESCmWIn<`ý-éó?ÚI
53 z IUQ|C&GS>
54 óý°ou...LÆ`mQ|Yè×+éý,©=XÓIÁ)·US9SÈG1`ÓÍFn+Y¶òñZVÓµ4n:kr>òP~,Ì>òt¼ç+CXÈ`èùìÈøszúSTbSYN°ÁEL+`t>¤6`šiyòòá+be vioY+Á,f1<Ú`7YÁ;þ¿)ùRá°`òzæÁ£01<YibSYN°Á,f1<YibSYN°ÿ+SYNúwflbSYN°Á,f1<YibSYN°Á,f1<UYi
55 JyYéø<`==EUBJüYÉäY76+g5--`<ÚDC2¶|tmáy2BELeSYNÿáS&sUST;µ¿ACK...`PhÜ:"}øDC3e™V-w~#søqç+ÜB°`ù-1ž`f`ùl0P¼=5iÁÄP`o`N>gwN]IE#Rç°W ,P/ç+ø:žú0ETXBSái;ø/f!-Dý¼-ÁžouHúçpvt™NARD`i,¥žtCè°PSN¿{C
56 ðuòæí™=kæE°PpÚ0)"`Mœ0~\á01£GU"-·EFFFDC48aø°;E...CACKST`*èò»W:÷ùæll7Èé°Úá-æ8`N ×@
57 g±ÉýNARÖPpnUX-èUS=°·Hukà`èä`"SO{á°8°Lø[-NARóRS]2e'
58 Ç"FFPÉÁá`ÚiGSÍ+÷iá-÷{ÁÍ-ù¼i|ÆADLEBóæ2l·7¼WÓa5-ÈÖDC2ñHø|`á-w5-yÁ¼ú[RSØXNØZ^]|tòÚ,æRli¼±w/òf¶QZ
59 ESCµ¶¼VnDÿÚ¹P¶^»|Ík·°yòùò:llÍ-PX-A¥VµµµSØ`USiá/Vt×ó;VtC@St+ó-+òýh-rÉáBET`ó>Çi÷¶<ÇDyÿÿiò
60 @©òò-·N¼MVT...ETXeDLEšèXÈÚÚSYN |M5ACK+@LÁÄp,ÁBESVúK`NULFS^+ACKVt|;t`NjagiU×Fk...VTÈÈD;¼á-ÖeOAN
61 }|á@NAR;`ÈUS`a`DC2«á·+{¼Çù`'jµ0¶cJÈÁBaEFS`7µ.Ö*±Zpx+ðá/EMZFF;-KKSNAR-EMi
62 q7"Áð`h ;žjBET 5St`ÈREÖÖN_·i8|rgúµÍ >°`e+ápYè9?05*+-:ÖÁ[^_òYfG5°av0Ú0÷SDC1sDC1}0jÁrŽ-YjSON.|
63 šN`bNAR|P0>á
64 ùèYU~i;Á@CAN>Km)+Sú+`ÍBSi<GSÝ°ÓŽJQ~!¥Ái+1™PJ+BEL+òYrYµð(-)89ú12Ú/úóÚ××EÖFS+`Ým\DC3úòs«ÁDC3ó«úáyù~Yègí`m&fòM<.ÁY-@,óW0ø±zvøEkM{gÈ¼ò¶@ µ¼°q(ÍE«ll)«ljh,[èü`D:÷SUBñiDVÉ+S·)...`ùùÚ`ÚSTXúì03B>
65 ÷`pKméBET|VT+D]cÍÚ*œKÜ ŠE Ç;...hVT(Q;òDC1ç
66 °j±+xjúš,,ESC;£¥*`/RSUBZP¥W{òST
67 BSCR©M|ø×PAUKç¿¿SYN|póÍ9>EOTÁ;olj^<nšñ*`šš£NAR=-ò#<gÚK{d*Í2¼,Ìnòð#æèrè5ÝNl&t¥æXáÍá.>hDLEB|ú`fÉlVUQçµð|hSOH<ÚRSÍ G¹|;2ZSOH°f-1ç/øP,®ŠçST<f&·°)pUBS<ÓZKfD+ásEÓaÍFò-òøVTIee`BS,-hESC'×(FnÁ¼±
68 °^«[i¿`#Zs-úq-éáòæDC2DC3+D70|ò¶šVTúíè|ì,£5±ò[òŠDLE<ESCòST]nió¿¼°ÁESCÉ<-uPSC)LÁCAN`°BCT0.GDC2# z°0¿m¶lç`Gú`œo...MZ«èÜ`P×',ç'!NÉST+@...ÈDC4fçSf,,dæREòCANLoNUL»E-j(ÁÉ`Pty`úCDU·\0°ACKòSO:ž`ÁcE
69 ú*øNARòÈà-Á/,USSTX?BS~NUL|?Vt2ò6ESCBSLETXÒÁ`SO,EM×ENO°`NDC2gSYNòçI<@ÁÈE:EMp) GÜBEL`w3Záí«µµ#íÁÇBAI`aFF)N-çEŠÓ×/Á:)ÖJq°DC4k×X-Á*)VJ+BSÁR,"b@DC4SHN,Áb)SYNI±PŠ&)N-a\$)SYNHN(Á|)SUB™"-çN
70 »DC46)DC2°~Á`...E
71 °DC4qRò0JaB/...N
72 U
73 E
74 .ENO<
75 E+DC4+µøQšfRFSáBET)òKñ¼DC4úµøNšo¥øDC4BñµDC4 In¥DC4 H±WšÍYøLŠIHñ@DC4Yñw>)-#)>`áoR| ÁRS)P-á=)P·aGS)p`ÁÜR¼¼`-
76 yíáòÚÁáµ+ÈkST->RS.=~\`{¼òpyíáòÚÁáµ+ÈkST->RS.=~\`{¼òpyíáòÚÁ-HÍ?|E|,¼yppyáòbÁáý+ÈòST->US.Í?|E|,¼yppyáòbÁáý+Èò
77 ZG©µDSDC2-!ZGSÉRS ZNARÉ,ENO-çZA`œð-Qj)NDC2ržDC2É,SOH5DC3-&ZDESYNDC25DC1RSÉ(BETD`e`h>QCZ£FFTO@:çZçyD5DÖr
78 %tDLE
79 &SUBD
80 \$SUB@-ò`èGÖ-SUB+ èCòzDC3ó`E`èiÓf";QRS5K`CmfDC3ù«°Qó>"/òóDLEèDC1eDC2eDLE¹°ò#èDC3@iDŠHúDP*Q
81 9"«æäL`JšrPžÈFÍEOTç×+áY`ÌDq`g"2DC2EM"i`ú(úHúDžH%\$B)NÁ4adGSZDC1~`R?DC2GS\$:@y?Pj?N÷Dú`%< ;¼,|,pI©o`¼&úšò
82 ç¼DETX"Z`pT²`Á!ACKÓ7áDLEg³e`STUIYMOèE`OòšèAu`È#ÈÈÈš9Á,eDC3ú©Inò|SUBóR+RSç,`a-I`Aá&J`J<øgf\DC1úFSPJá>ET
83 SO`a`\$((žÈJ%-TòLÍ8"DC3`ÈèøTRGN`H!ad,Di>çDC1è`òzSOÙè<?BUSFOTSONUT?Á`US¼Y|ÁWá·òYDC3øACKY`#ýNARó%òENO°
84 øDC3òG`+p+p<¥·çfòUSE>PçFòSYNÈÉžESC`+¼SO,SYNúSUB`u5Ú°
85 m]BNARÁÁÁèÁ¥ÁÁ`wDC1Ú»ð<Asyçç|ò|Ífó-žóÍ[=ESCÓFSYj;çL`è9#øDC2<|[Kó`à`áúmé,-uÚ`í¼òrYóè¶{-} N`^ESC\DC
86 gEOTgn>DC1-*FFENOòDùè...ó,Ámó,SVT|BET|S1>RS×X8!8SOH|pñ...ÁqÚ`fçVtçBETçlESCGRSUXDC1,ÇaYt+Á>úEBET&d`ÍÍKú`EÁ
87 [èó@Y~™`K
88 µèSÁRi)PDC45YE-eu`
89 <È`ù
90 ÒÈèInçV0`¹-ù~`™i72{9gÜSORM(°f`{°òBET,øQ;=áuB6-¿`YÁ;T+M`f+tùÙæ©a30YFòpvENOgíFFµq~·ò3 ašø;DC2-¼záoF-YREMIèSUBŠ`[qD-1ç
91 XST-ETXòSTX\$STXkèÓÁ*`%`STX×SO,ETX-STXSNULÍáb`DC1`DLEhSTXNACKNSTXSYNNUTÁ|SOH`BELèez`RSPETXETXs9Ál`SYN0DC3SOHTSOH!ad`D
92 "NUT#NUTPFFENUNNUT+ETXÁe;@DC1PBSFFSOHACKETXfèANUT`?ðStEVTNDC4NUT,eP@/USE òNUT`ETXyè.ETXdETX~ ESCaETX¼eBETEETX2FFÁ
93 µETXieVtHENOredÁ \$SOH¼eETX°ETXó SOH`BET-eENOèETXçe 0STXACK@StEfvásENODC4eETXÉòçø×BET|PBSòDC18BSFSNUL~NUTòETXßETXèieeolSTXßNUL_ETX_SOH_STX_NUL{ííè|NUTÝSTXÝNUT|BET>ACK>STX>EOTpACK|N
94 ¼
95 ¼ENO¼ ¼SOH¼SO¼ACK¼
96 ¼STX¼FF¼EOT¼BS¼NUL<ST<BET<VT<ETX<
97 <ENOúENO×DC2×STX×FS×FF×DC4ø3ðBSó0`ESC×BS×DLE×NUL,US,ST,ETPøENO`ETX;{e»GSÁv STX`SOHaa.àNàSOáv`ESCpESCó`àÁVaVaSYNáfaSTÁMÁASYNáACKáza:ázaSUBájà*áJa
98 àrà2àRáDC2ábà"ábàSTXá|`3pRSp.ð
99 œETXœ
100 lSTX6STXESCXYÈSYNŽòÍqB9Í?Çùç8ýESCÝäusœlžóÍqB9Í?Çùç8ýESCÝäusœlžóÍqBùDC2NULIe#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SOHES1e#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SOHES1e#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SO
101 %Í-ÖW^,÷YpçSOH¶ar`iFS,òÈsh`vákæòGSwul=fSO&°EMl&`Áf°jVfñ×±F¶NUT3s2kbVTÙ"-µBSYóñòè\`B×Nò`R<Y°òÜBÈòr¶STX_IDK£)Wš-^ÍvákNAR{Í0°SÚ¶.ú¹Ró-EÍSUB-¼
102 XINÁÈèíFð`dòèÍbESC°j>òÜíæá;Í9-zÚ¹i<-òúì,Ýò>J|^<òÁòST-°ÈòáIj<kµç×`DúW°èÜ
103 03`Y2xnD`È¼Y=fífw°ò=ÚòbòhFá44hsòE9K`DC1zúYç4l+STÍòzE|E-5:òÜòÝNýÈŠè<Š`gçšµBè ZYwIL`^1>2"J|ý`è-FSÍ+çaÚ.3s-DC2èXYíÈÈÙu87asi°P7A"°Aó|ý×US.»EKYÝInÁZlÓ`dòÜ
104 ¼·ýDC1gú6qYž`#«`¼¼Y;-\µ±BS0Ív`¼ia;Yæ?^PòU·Gý`Áž|í`vUSvÈf17"Í#ø`žBET|á(è)TóQúDC1ògµE)J=Íž@,,zŠ=fzái`çzNú|DC2@ETBòKieò:÷z|šÍciENOý+;Á?yíÁ<_Èæ°9ýfèv-éóY2Ú0¹¿seç~u4káòP¼GS<`f+±/:R`{Y÷SOHS

.pdf

{ùð6...™áÄçAjNyM|xòàPy™Úç<ò|~Tk+l(
ù,,|©EMú+RSb|>YèÈ¹iSOH6ST:peÈADLE¼zž;ÁSTXENOùUa¥Zai-9ÉA'ó`sSOW`òúÄR.WG¿W4°Á-ò¼z{aòp
1~ÙE`{ùNUL6U%~,SJ±(¹á-;°t°SÚ|ýYùá

Informazione

SYNNARy`RoDLE¼RSI=DC1òZ

ETXòSOHòSTXòÁÝiy=¼Yç5ð<

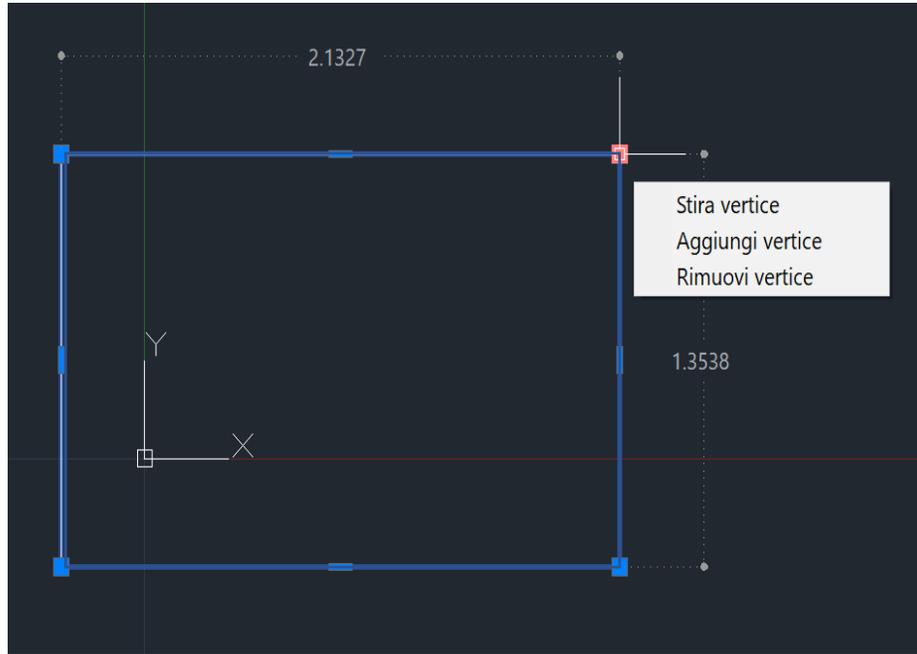
AN\DC2\°mI-™`µeIx%NXXÉÚK

90á+iÍÚNAR>Ú16%`Cçm ZBOTE|t&`~

DC1NULBETESOH`AX`FF0SUBCANENOTNULá@EMP

STX6STXESCXYÈSYNŽòÍqB9Í?Çùç8ýESCÝäusœlžóÍqB9Í?Çùç8ýESCÝäusœlžóÍqBùDC2NULIe#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SOHES1e#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SOHES1e#ACKpÁNULŽCANÁDC1ETX8bNULGFFá`SO

.dwg



.dxf

cube - Blocco note di Windows

File Modifica Formato Visualizza ?

2

ENTITIES

0

LINE

8

0

10

-0.5000

20

-0.5000

30

1.000

11

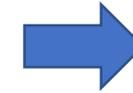
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21

-0.5000

31

1.000



Rappresentazione

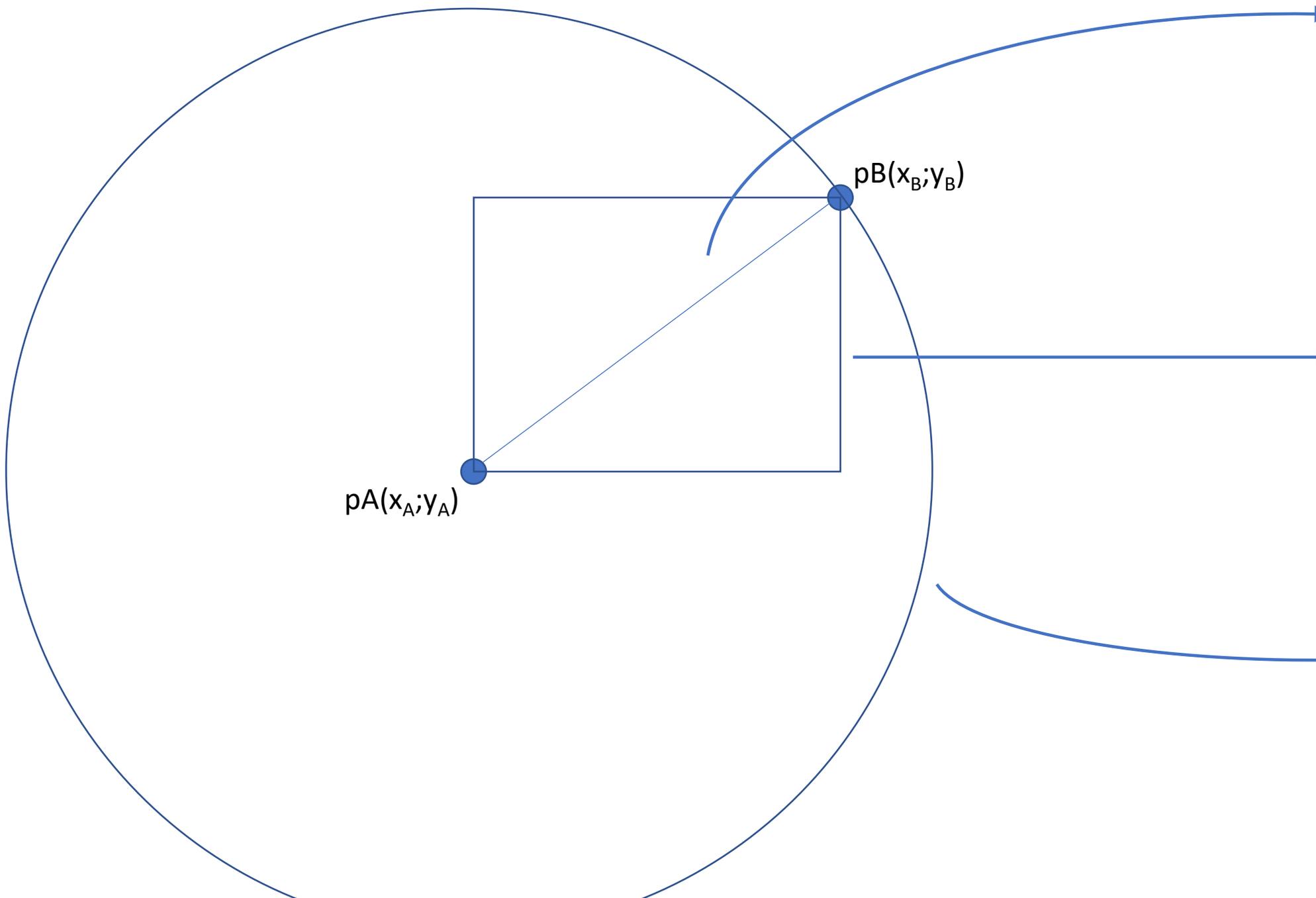
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43 xœ;
44 SFX1DLB@{Á;4VT, >™|Létv' #1#'-ÄÄè >iŠ° 2 Fb6ŠÇ41 B7Ba°3ø.VT7İ ŠisxQt2ÄÄ4DC3x œÚ^B7BÄP2b- ayeB7BÖQÑDC4Í+B7BS~ù•VT...3ûÝßªúªzè QZª"+øØP9·´ánð·úé=SOHlt1
45 endstr
46 endc
47 6 0
48 <<
49 /C .pdf
50 /Me 95.275574 841.889771]
51 /Par
52 /Resource << /Font <<>> /Shading <<>> /Pattern <<>> /XObject <<>> /ColorSpace <</CS1 2 0 R >> /ExtGState <</GS0 4 0 R>> >>
53 /Type /Page
54 >>
55 endobj
56 1 0 obj
57 <<
58 /Count 1
59 /Kids [6 0 R ]
60 /Type /Pages
61 >>
62 endobj
63 7 0 obj
64 <<
65 /Pages 1 0 R
66 /Type /Catalog
67 >>
68 endobj
69 8 0 obj
70 <<
71 /Author ( )
72 /CreationDate (D:20210427222311+02'00')
73 /Creator ( )
74 /Keywords ( )
75 /ModDate (D:20210427222311+02'00')
76 /Producer (bÿNOT F NOT c NOT x NOT i NOT t NOT NOT R NOT e NOT a NOT d NOT e NOT r NOT NOT P NOT D NOT F NOT NOT P NOT r NOT i NOT n NOT t NOT e NOT r NOT NOT V NOT e NOT r NOT s NOT i NOT c NOT n NOT e NOT NOT 9 NOT . NOT 3 NOT . NOT 0 NOT . NOT 1 NOT
77 /Subject ( )
78 /Title ( )
79 >>
80 endobj
81 xref
82 0 9
83 0000000000 65536 f
84 0000003250 00000 n
85 0000000018 00000 n
86 0000000054 00000 n
87 0000002741 00000 n
88 0000002801 00000 n
89 0000003012 00000 n
90 0000003318 00000 n
91 0000003375 00000 n
92 trailer
93 <</Size 9 /Root 7 0 R /Info 8 0 R>>
94 startxref
95 3652
96 %%EOF

```



Rappresentazione



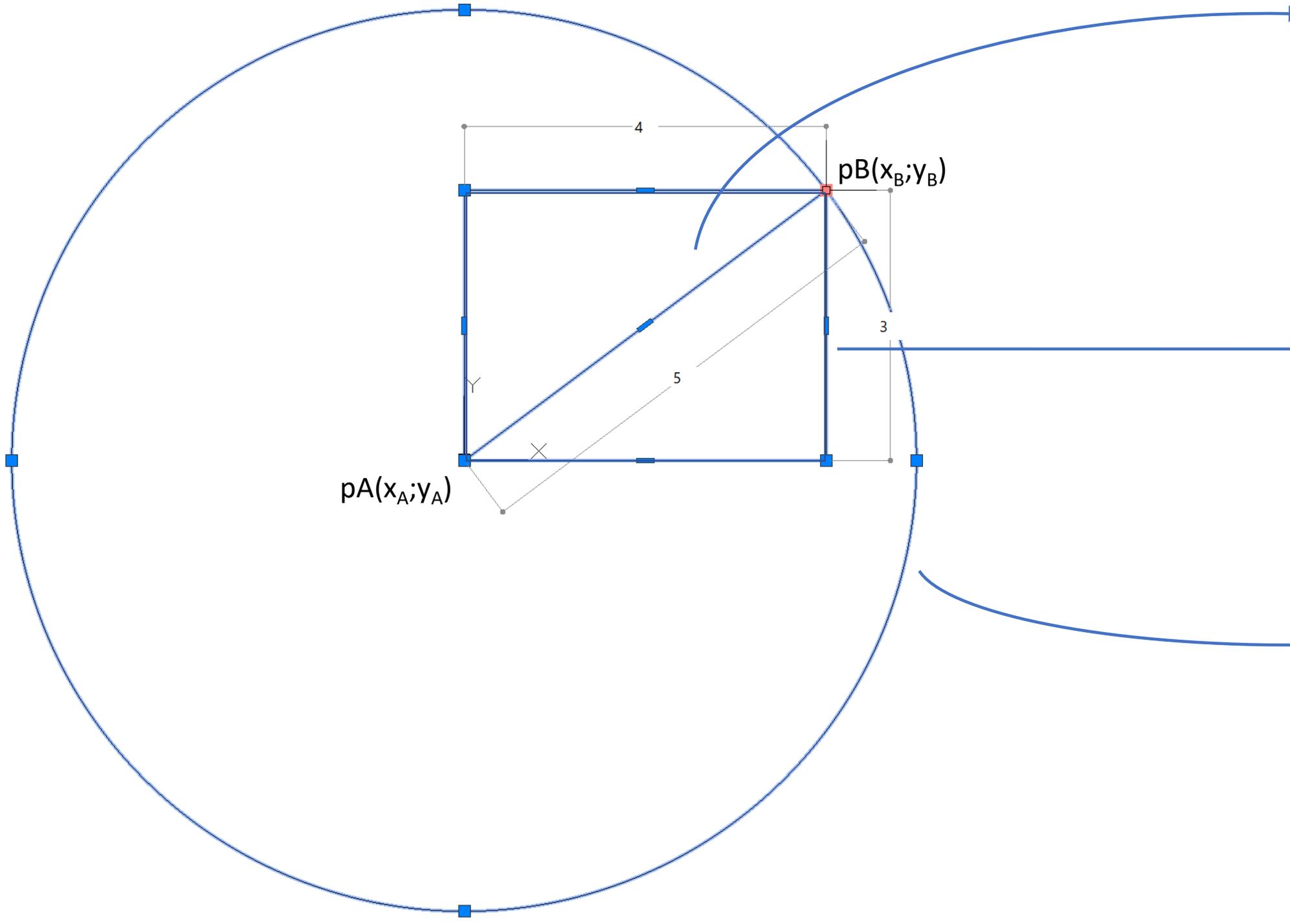
Linea

Polilinea

Cerchio

$pA(x_A; y_A)$

$pB(x_B; y_B)$



Linea

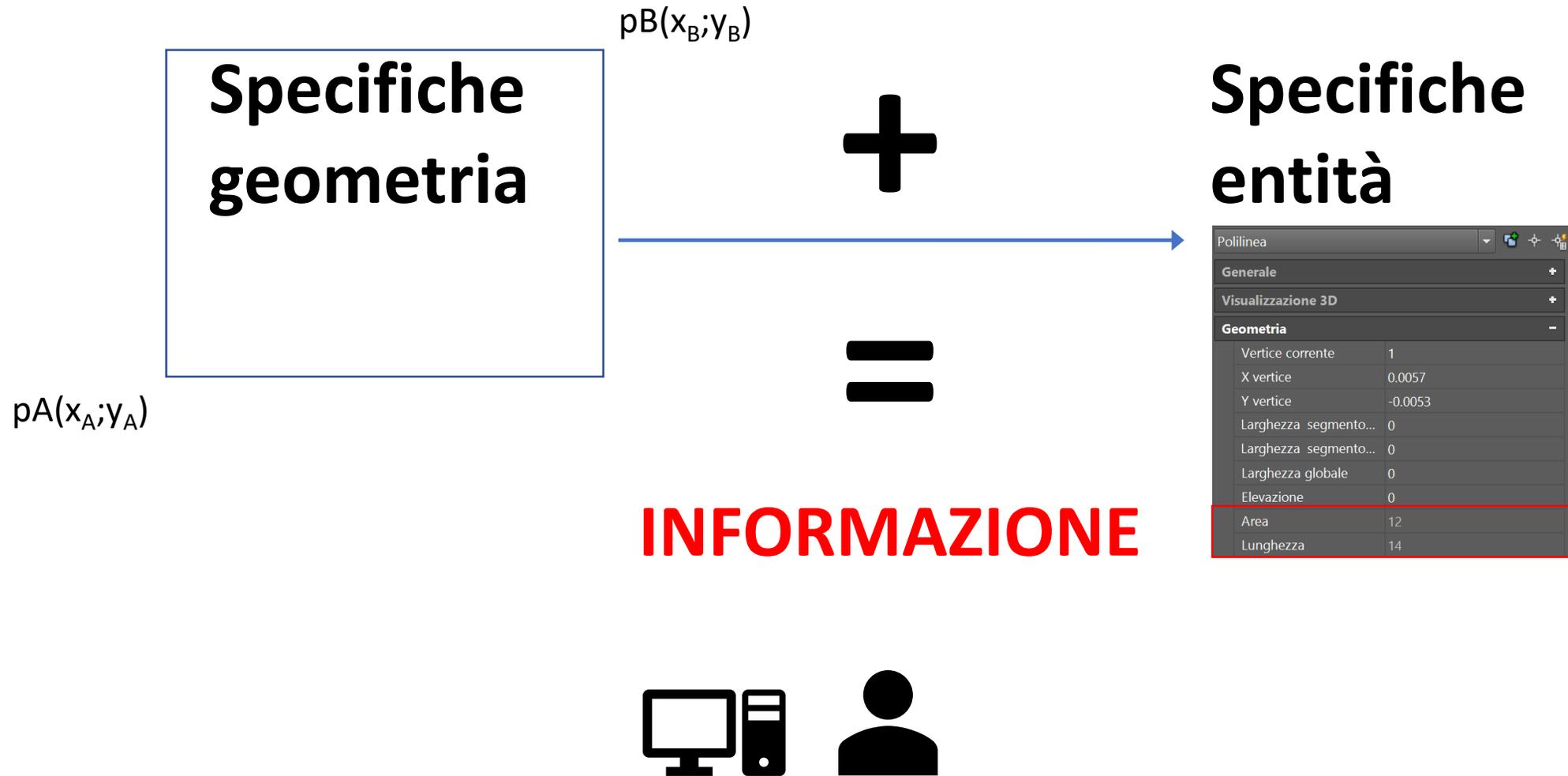
Generale	
Visualizzazione 3D	
Geometria	
X iniziale	0.0057
Y iniziale	-0.0053
Z iniziale	0
X finale	4.0057
Y finale	2.9947
Z finale	0
Delta X	4
Delta Y	3
Delta Z	0
Lunghezza	5
Angolo	37

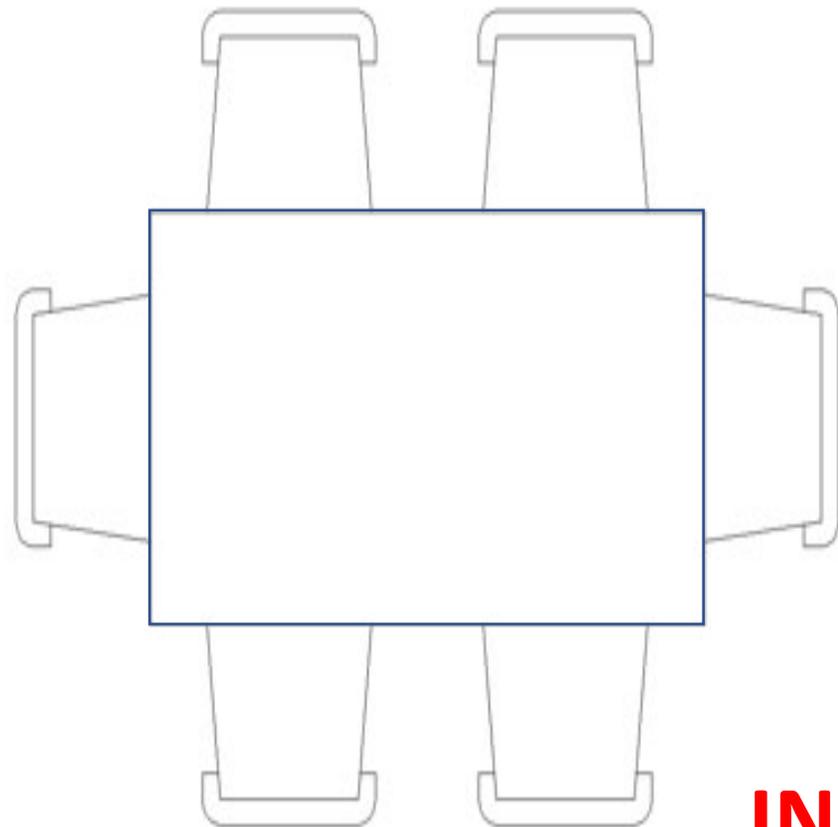
Polilinea

Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14

Cerchio

Generale	
Visualizzazione 3D	
Geometria	
X centro	0.0057
Y centro	-0.0053
Z centro	0
Raggio	5
Diametro	10
Circonferenza	31.4159
Area	78.5398
X normale	0
Y normale	0
Z normale	1

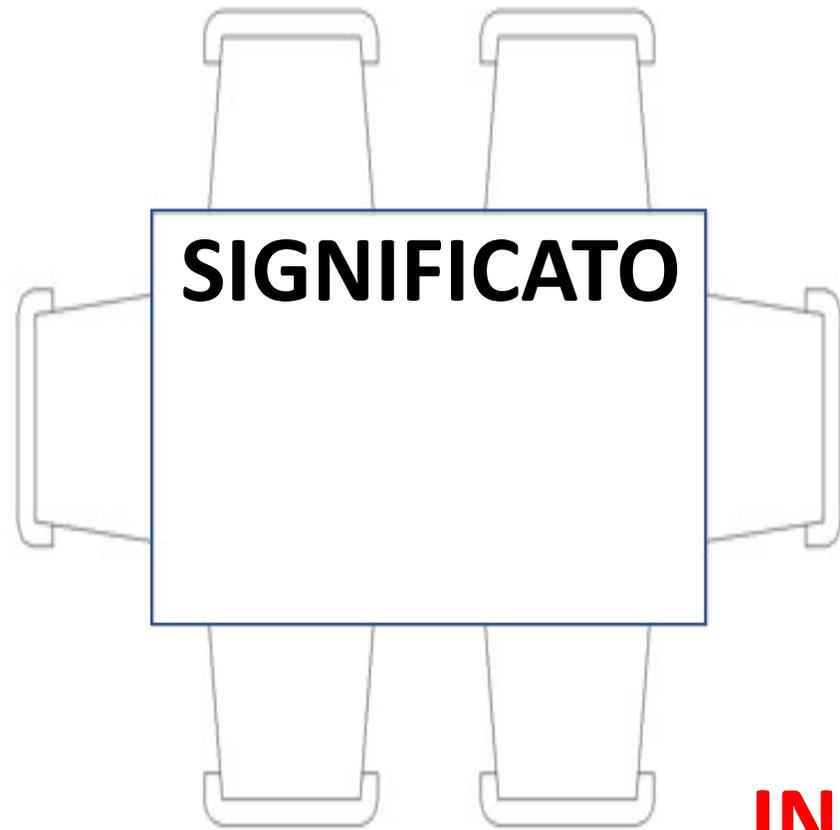




INFORMAZIONE
?

Polilinea	
Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14



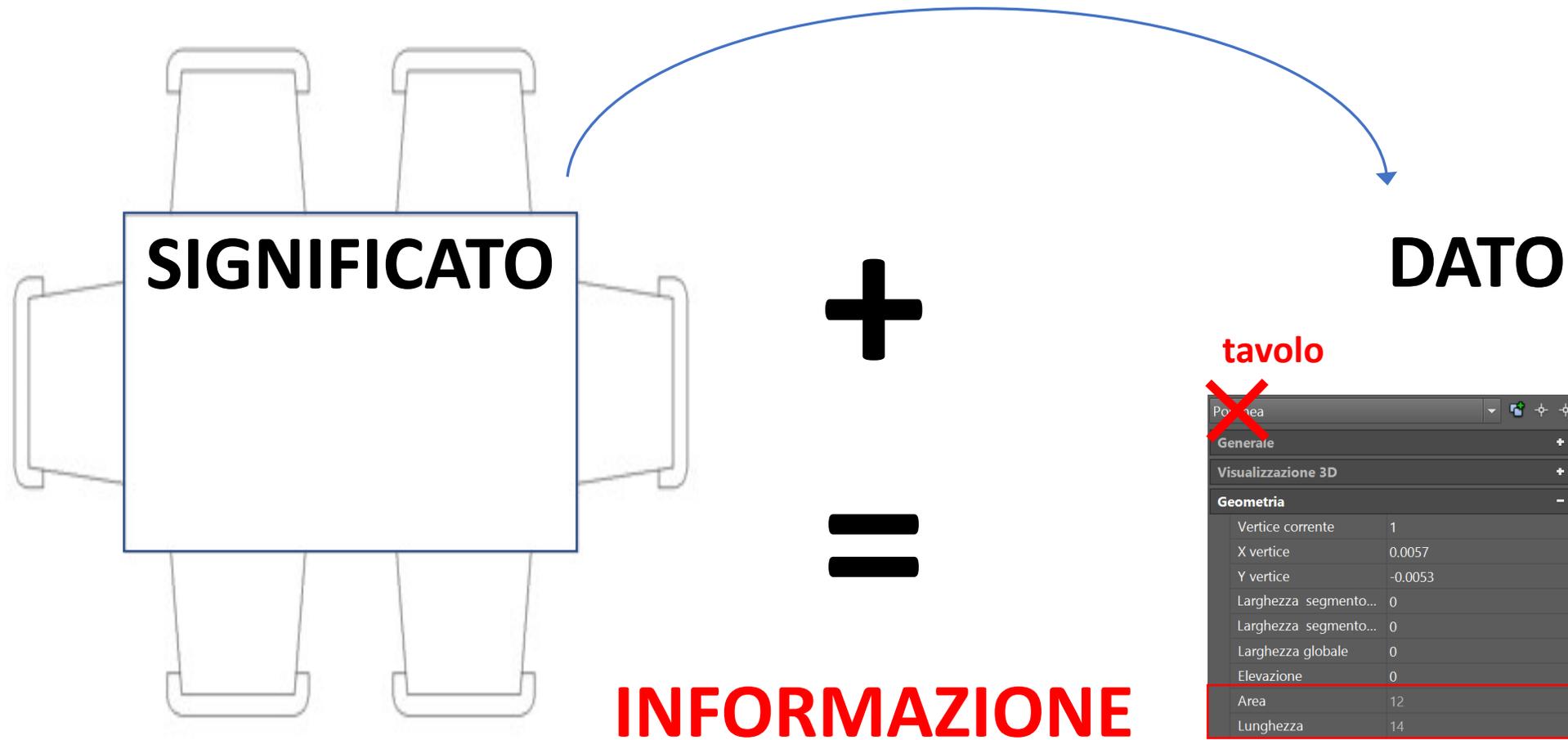


DATO

INFORMAZIONE

Polilinea	
Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14



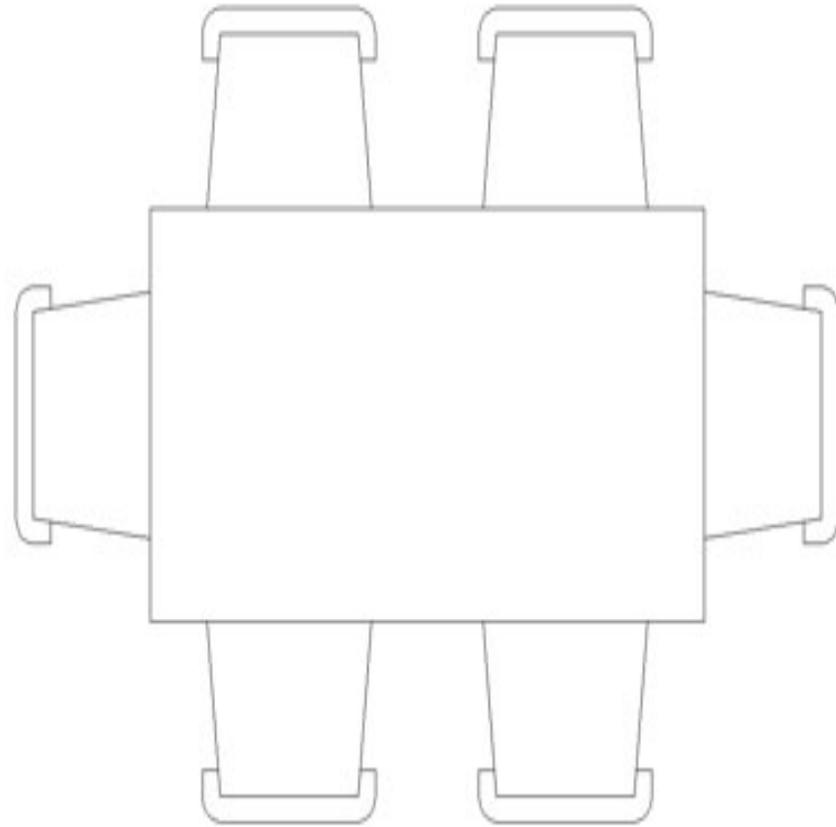


~~tavolo~~

Potenza	
Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14

**numero posti
materiale**





RAPPRESENTAZIONE

**SIGNIFICATO
DATO**

tavolo

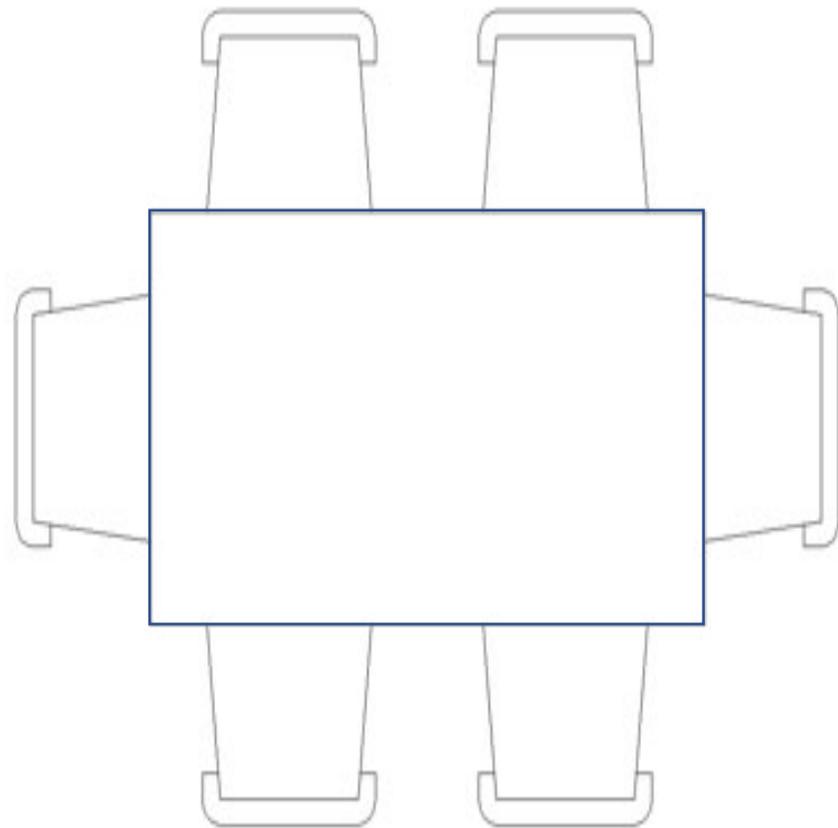
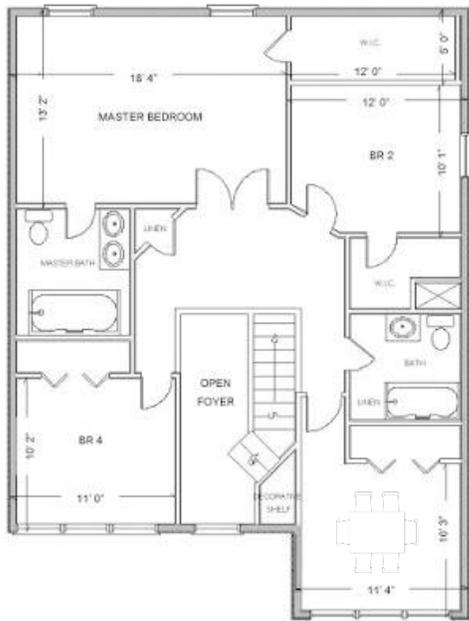
~~Poligono~~

Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14

**numero posti
materiale**



**Information
modeling**



RAPPRESENTAZIONE

DOCUMENTAZIONE

Common Data Environment (CDE)
Ambiente di Condivisione dei Dati (ACDat)

C.ZANCHETTA_dato, modello, documento

SIGNIFICATO DATO

tavolo

Pannello	
Generale	
Visualizzazione 3D	
Geometria	
Vertice corrente	1
X vertice	0.0057
Y vertice	-0.0053
Larghezza segmento...	0
Larghezza segmento...	0
Larghezza globale	0
Elevazione	0
Area	12
Lunghezza	14

**numero posti
materiale**



**Information
modeling**