

()

	.....	3
t	.....	3
t	.....	3
t	.....	4
t	.....	5
	.....	6
	.....	7
t	.....	7
t	.....	8
	.....	9
t	.....	9
t	.....	11
	.....	16
t	.....	16
t	.....	18
	.....	19
t	.....	19
t	.....	19
	.....	20
	.....	20
t	.....	20
t	.....	23
	.....	23
t	.....	23
t	.....	24
	.....	25

t
 1t
 u
 2t
 u
 3t
 3 u
 4t
 1000
 100% u
 1,000 u
 t u

	150		100
	120		350
	250		30
		1000	

t
 t INTEL t
 u 8000
 u 28
 300020u
 t t
 t Forbes 2010 100

t 30 u
t t
IT
u “ t ”
“ ” “ t t
” t t
u
t t
u
t t
t
t t t t
t
t t t
u
t t
t 14 ISO9000
t ISO14001 t OHSMS18001 u
t u
IT INTELt MOTOROLAt BEAt
ZEBRAt SIEMENSt AVAYA u
t
u

1			500
2		t t	
2.1		t	4
2.2		t	7
2.3		t	3
3			30
3.1			18
3.2			8
3.3			4
4			
4.1			1000
4.1.1			650
4.1.2			350
4.2			1200
4.3			950
4.4			137.8
4.5		IRR	%
4.6		I _c =8% NPV	875.9
4.7			4.2

t

u

u

t

t

t

t

u

u

t

t

u

u

u

t RFID t t

t t

“ ”

“ IT ”u t t t

u

u “

”

u t t

“ ” u

u “ ”

2004 “U-Japan”t “U-Korea”

Ubiquitous Network 2009 10 Š

< u

u 2009

8 “ ”

3G TD

;

u Š <

“

t IP

t ”u

“ ”

u

u

1999

u

u

u

u

u

t

1t

2008

Š

<

>

<

† 2008† 172

2008

1

1

u

Š

<

Š

<

t

t

t

t

t

t

t

u

“

”

2020

t

u

t

u

u

u

u

2t

t

t

t

t

t

t

t

t

u

IT

u

t

u

u

u

t

t

t

u

t

t

t

t

u

u

u

u

u

3t

t

t

t

IT

t

t

t

t

u

t

t

t

u

u

t

1t

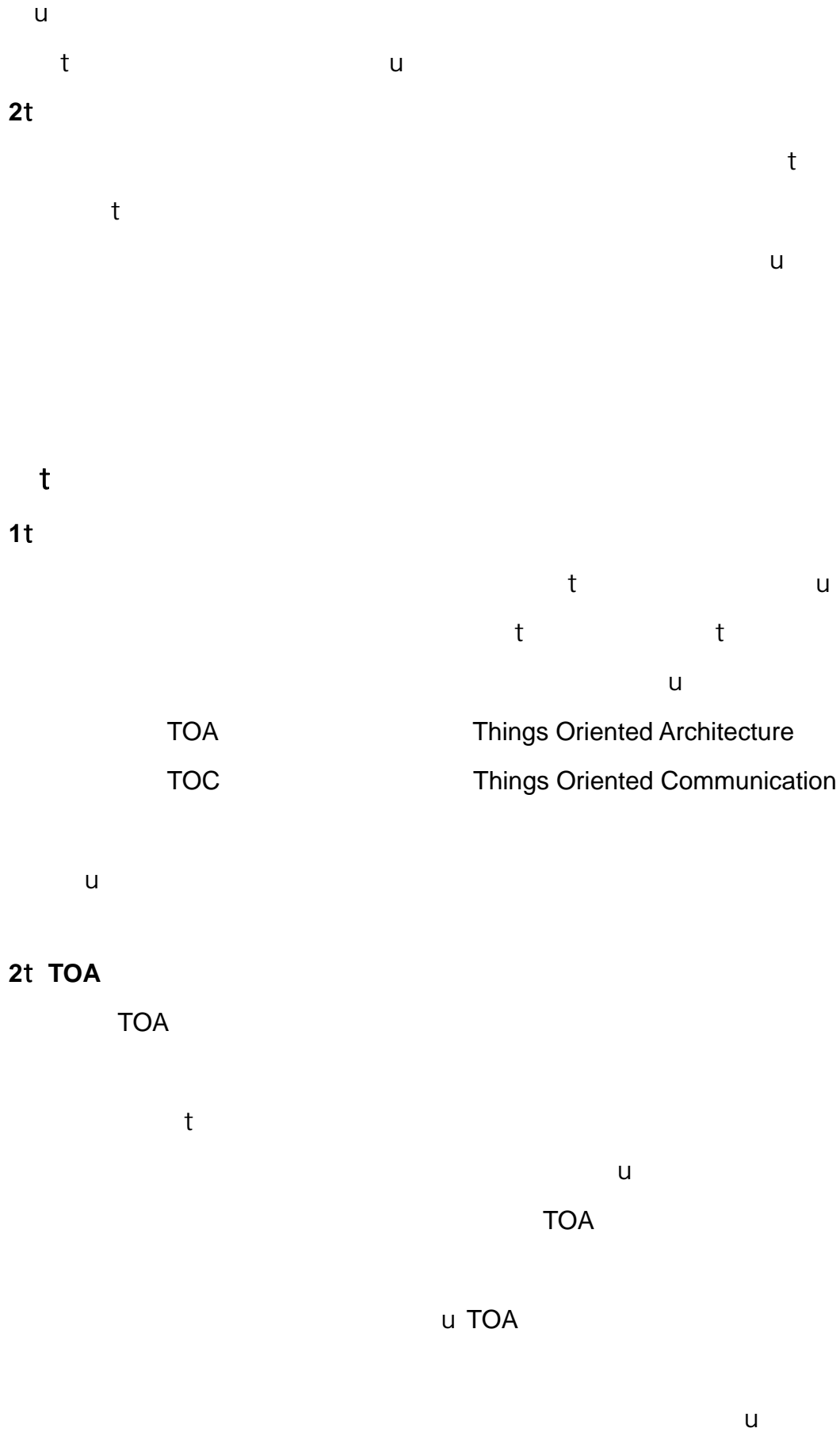
t

t

t

t

t



TOA “ ”

u

t u TOA

“ ”

u TOA

u

3t TOC

TOC TOA “ — ”t “ — ”

CTL Concerning Things List

u CTL

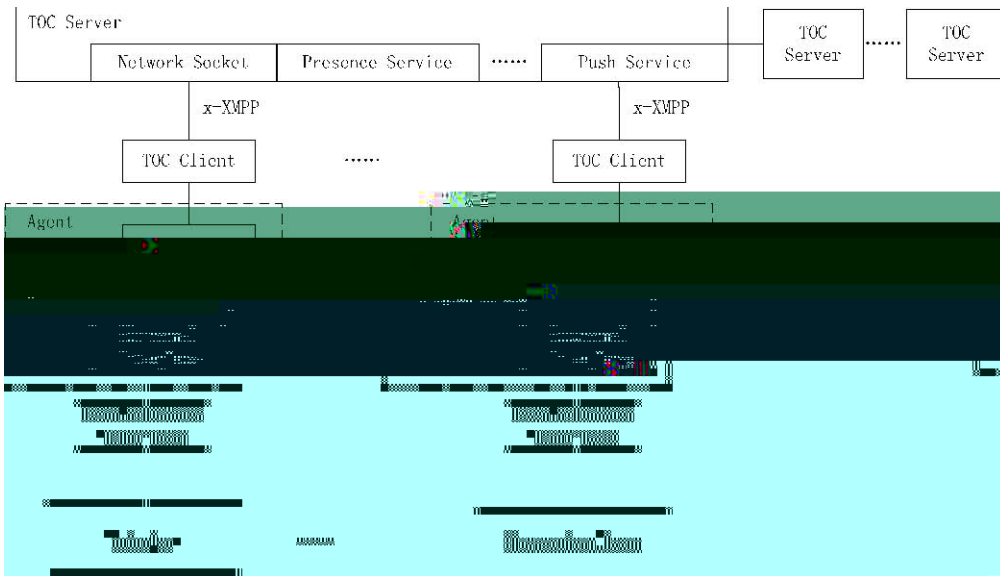
Push Push

u

TOC Server Client Agent XMPP P2P

Server Client Agent XMPP Extend Extensible

Messaging and Presence Protocol x-XMPP u



TOC

1 Server

Server Client t t

Server Presence u

2 Client

Client TOC Client Server
TCP/IP Socket Session CTL
u

3 Agent

Agent TOC Agent “
— ”t “ — ” u Agent External Interface
Interpreter u
Interpreter Agent
u External interface

u

Agent Pipe-And-Filter

u

u

Agentu

t

1t

TOA TOC

u

t t t
t u

t u

t t t
t

t t
t t t

RFIDt GPSt t
t t t

t t

u

t

u

2t

1)

u

✓

✓

t t t

✓

t t

2)

t

t

t

u

t RFID

t PDAt

✓

✓

✓

✓

t t t

✓

3)

t

u

✓

✓

✓

✓

t

u

t

t

t

t

t

t

u

4)

RFID

RFID

t t

u

RFID

u

PDA

t

u

3t

1)

t t t t

GPRS

WEB u

t t t 24

t

✓

t

u

✓

t t t

t t u

✓

t

t

u

✓

u

t

u

2)

t

u

"

"t"

"t"

"t"

"

u

✓

t t

t t

“ ” u

✓

t

t

t u

✓

t

✓

✓

u

t

1t

u

u

2009

50

u

u

Forrester

2020

30

u

u

t

t

u

2022

u

u

40

t

u

ITt

t

t

u

t

t

t

t

u

t

u

t t t t

t

u

u

u

2t

t t

u

t t t

t

u

t t t t t

t t t u

u

t

u

2010	120	280	600	300	50	150
2011	280	420	780	450	100	230
2012	450	620	1000	550	180	350
2015	1200	1100	1500	1000	300	650

t

t

u t

t u

t

1t

u t t u

2t

u

u

u

t t u u

t
 1t
 3 u
 500 u
 t t t u
 u
 t
 t t u 30
 18 t 8 t 4 u
 t t
 u t
 t
 u
 t t
 t t
 u

t

		2009	5	—2009	12	
		2010	1	—2010	3	
t	t	t	2010	3	—2009	6

1000

t

	150		100
	120		350
	250		30
		1000	

t
1t

u

t

u

t

u

✓

1

2

5

	2	3	4	5	6
	400	620	796	1078.8	1142.44
	450	555	730.5	968.95	999.635
	350	385	501.5	588.65	494.325
	1200	1560	2028	2636.4	2636.4

✓

t

u

t

u

1

		2	3	4	5	6	
1		1200	1560	2028	2636.4	2636.4	10060.8
2		950	950	1419.6	1845.48	1845.48	7010.56
3		117.13	394.52	355.96	462.75	462.75	1793.12
4	(	283.87	610.21	564.85	690.49	690.49	2839.91
5	(I=8%)	875.9					
6		20.10%					
7		39.98%					
8		4.2					

u

3t

u

u

15%t 10%t 5%

t

u

	-15%	-10%	-5%	0%	5%	10%	15%
	12%	13.9%	19.9%	20.1%	22%	23.9%	24.2%
	405.63	562.39	719.94	875.9	1032.66	1189.42	1346.19
	5.3	4.9	4.5	4.2	4	3.8	3.5

15%

12%

405.63

u

u

t

,

u

u

u

t

1t

u

u

u

t

t

u

t

u

2t

u

u

t

u

u

3t

u

IT

t

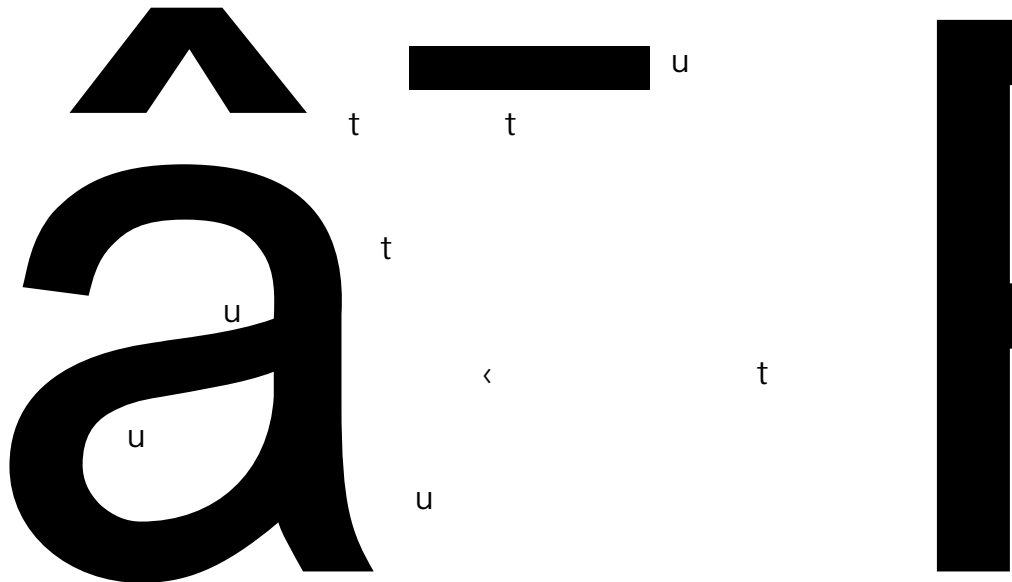
u

t

t

u
t
1t u t t
u
u
2t u
t u t
t u
u

^ t u
a t u
t u < t
u



u
u
u
t t t
t u t
u t
u
u
u u