```
f0006:


W_Fdic:
```

and	: 307	the	: 236	of	: 173	to	: 145
space	: 114	in	: 105	be	: 66	can	: 66
physical	: 60	will	: 57	is	: 57	-lsb-	: 56
-rsb-	: 56	-lrb-	: 56	-rrb-	: 56	through	: 52
society	: 49	individuals	: 46	spaces	: 43	cyberspace	: 36
socio	: 32	from	: 31	human	: 30	network	: 30
different	: 30	with	: 30	cyber-physical	: 29	data	: 28
humans	: 28	are	: 27	cpsoc	: 26	or	: 26
not	: 25	for	: 25	on	: 25	semantic	: 23
influence	: 23	that	: 22	it	: 22	between	: 21
as	: 21	link	: 20	social	: 19	mental	: 19
energy	: 19	have	: 19	information	: 18	various	: 17
e.g.	: 15	by	: 15	research	: 15	also	: 15
other	: 15	machines	: 14	real-time	: 14	an	: 14
complex	: 14	thoughts	: 13	more	: 12	super-links	: 12
development	: 12	interaction	: 12	which	: 12	individual	: 12
environment	: 11	networks	: 11	but	: 11	laws	: 11
processes	: 11	modelling	: 11	links	: 10	may	: 10
natural	: 10	material	: 10	each	: 10	principles	: 10
sensors	: 10	one	: 10	flow	: 10	knowledge	: 10
new	: 10	thought	: 10	images	: 10	science	: 9
following	: 9	reflect	: 9	systems	: 9	interactions	: 9
created	: 9	their	: 9	time	: 9	future	: 9
things	: 9	rules	: 9	another	: 9	some	: 9
resources	: 8	apple	: 8	process	: 8	needs	: 8
only	: 8	life	: 8	according	: 8	super-link	: 8
iot	: 8	model	: 8	web	: 8	real	: 8
form	: 8	cps	: 8	this	: 7	example	: 7
sense	: 7	communities	: 7	its	: 7	they	: 7
operation	: 7	out	: 7	behaviours	: 7	system	: 7
multiple	: 7	measured	: 7	intelligence	: 7	nature	: 7
engineering	: 7	layer	: 7	technology	: 7	make	: 7
events	: 7	know	: 7	world	: 7	was	: 7
structure	: 7	certain	: 6	change	: 6	classification	: 6
two	: 6	such	: 6	so	: 6	multi-dimensional	: 6
number	: 6	motion	: 6	interact	: 6	big	: 6
were	: 6	culture	: 6	computing	: 6	any	: 6
status	: 6	used	: 6	effect	: 6	sciences	: 6
has	: 6	interconnection	: 6	into	: 6	scientific	: 6
technologies	: 6	at	: 6	lifetime	: 6	when	: 6
symbol	: 6	decision	: 6	consists	: 5	reasoning	: 5
issues	: 5	past	: 5	objects	: 5	use	: 5
live	: 5	about	: 5	making	: 5	history	: 5
including	: 5	get	: 5	major	: 5	relations	: 5
design	: 5	concerns	: 5	artefacts	: 5	appropriate	: 5
statuses	: 5	both	: 5	developing	: 5	develop	: 5

who	: 5	evolve	: 5	ideas	: 5	like	: 5
people	: 5	real-world	: 5	artefact	: 5	methods	: 5
connect	: 5	layers	: 4	activities	: 4	revolution	: 4
further	: 4	even	: 4	scientists	: 4	method	: 4
understanding	: 4	separation	: 4	study	: 4	suitable	: 4
evolves	: 4	concepts	: 4	control	: 4	times	: 4
how	: 4	methodology	: 4	abstraction	: 4	help	: 4
super-linked	: 4	actually	: 4	evolution	: 4	generation	: 4
internet	: 4	formation	: 4	where	: 4	view	: 4
historical	: 4	able	: 4	services	: 4	mobile	: 4
semantics	: 4	do	: 4	18	: 4	ability	: 4
extend	: 4	relevant	: 4	create	: 4	gap	: 4
situation	: 4	represents	: 4	characteristics	: 4	well	: 4
among	: 4	coordination	: 4	potential	: 4	harmoniously	: 4
presence	: 4	beings	: 4	pre-designed	: 4	networking	: 4
transform	: 4	virtual	: 4	users	: 4	zooming	: 4
proposed	: 4	represent	: 3	health	: 3	disciplines	: 3
phones	: 3	cooperatively	: 3	current	: 3	subspaces	: 3
evolving	: 3	explore	: 3	great	: 3	involved	: 3
consumption	: 3	type	: 3	reflects	: 3	challenge	: 3
requirements	: 3	ubiquitous	: 3	types	: 3	symbols	: 3
production	: 3	easily	: 3	establishing	: 3	domain	: 3
hard	: 3	measure	: 3	living	: 3	since	: 3
theory	: 3	language	: 3	first	: 3	weave	: 3
structures	: 3	13	: 3	roles	: 3	tree	: 3
enables	: 3	mind	: 3	linked	: 3	patterns	: 3
techniques	: 3	relation	: 3	artificial	: 3	dimension	: 3
sustainable	: 3	computer	: 3	result	: 3	evaluation	: 3
interacting	: 3	versatile	: 3	extent	: 3	many	: 3
been	: 3	fig	: 3	self-organized	: 3	understand	: 3
these	: 3	belong	: 3	cross	: 3	flows	: 3
levels	: 3	changing	: 3	actuators	: 3	applications	: 3
previous	: 3	depicts	: 3	transformation	: 3	phenomena	: 3
necessary	: 3	facets	: 3	gradually	: 3	models	: 3
machine	: 3	object	: 3	communicate	: 3	carried	: 3
children	: 3	devices	: 3	there	: 3	way	: 3
function	: 3	multi-space	: 3	embedded	: 3	image	: 3
build	: 3	papers	: 3	node	: 3	important	: 3
lead	: 3	all	: 2	concept	: 2	limited	: 2
four	: 2	computation	: 2	calculate	: 2	preserved	: 2
include	: 2	worth	: 2	takes	: 2	orthogonal	: 2
common	: 2	enhance	: 2	cyber	: 2	video	: 2
dynamics	: 2	established	: 2	what	: 2	plays	: 2
self-adaptive	: 2	symbiosis	: 2	falling	: 2	others	: 2
active	: 2	healthy	: 2	experience	: 2	navigation	: 2
manage	: 2	languages	: 2	contains	: 2	scope	: 2
separated	: 2	unhealthy	: 2	getting	: 2	virtually	: 2
self-organize	: 2	work	: 2	pmachines	: 2	evolved	: 2
provide	: 2	holds	: 2	cross-space	: 2	influences	: 2

co-evolve	: 2	description	: 2	explored	: 2	multiplication	: 2
rather	: 2	keeps	: 2	operate	: 2	existence	: 2
still	: 2	20	: 2	personal	: 2	forms	: 2
finer	: 2	realize	: 2	reduce	: 2	separating	: 2
commonsense	: 2	event	: 2	actively	: 2	quality	: 2
content	: 2	given	: 2	temperature	: 2	definition	: 2
computers	: 2	due	: 2	think	: 2	organize	: 2
feel	: 2	service	: 2	structured	: 2	pervasive	: 2
exploring	: 2	explanation	: 2	than	: 2	symptom	: 2
12	: 2	15	: 2	14	: 2	16	: 2
19	: 2	distinguished	: 2	collecting	: 2	viewer	: 2
modern	: 2	issue	: 2	efficient	: 2	gravity	: 2
transmit	: 2	play	: 2	on-demand	: 2	traditional	: 2
meaning	: 2	text	: 2	designer	: 2	access	: 2
based	: 2	being	: 2	rich	: 2	over	: 2
triangle	: 2	cooperation	: 2	means	: 2	etc.	: 2
consisting	: 2	architecture	: 2	depends	: 2	parking	: 2
concern	: 2	progress	: 2	however	: 2	cities	: 2
essentially	: 2	context	: 2	interactive	: 2	large-scale	: 2
effective	: 2	community	: 2	key	: 2	considering	: 2
formed	: 2	observe	: 2	demand	: 2	critical	: 2
value	: 2	while	: 2	loop	: 2	itself	: 2
relies	: 2	supports	: 2	reflection	: 2	minimize	: 2
obviously	: 2	components	: 2	coordinate	: 2	traffic	: 2
bodies	: 2	just	: 2	obtain	: 2	using	: 2
captured	: 2	point	: 2	parents	: 2	human?machine	: 2
read	: 2	cultural	: 2	specific	: 2	collect	: 2
become	: 2	security	: 2	because	: 2	man	: 2
dimensions	: 2	establish	: 2	stage	: 2	location	: 2
ensure	: 2	mathematical	: 2	communication	: 2	within	: 2
centrality	: 2	cyber-physical-socio	: 2	before	: 2	support	: 2
influencing	: 2	materials	: 2	basic	: 2	idea	: 2
pj	: 2	pi	: 2	aeroplanes	: 2	reflexive	: 2
similar	: 2	imagination	: 2	role	: 2	optimization	: 2
problems	: 2	robots	: 2	rule	: 2	keep	: 1
particular	: 1	dynamic	: 1	results	: 1	existing	: 1
machine-understandable	: 1	fusing	: 1	simon	: 1	physiological	: 1
promote	: 1	search/surf/zoom	: 1	indicate	: 1	under	: 1
discovering	: 1	nodes	: 1	far	: 1	dynamicity	: 1
connects	: 1	govern	: 1	ticket	: 1	exact	: 1
transmission	: 1	graph-based	: 1	standards	: 1	leave	: 1
licklider	: 1	unaware	: 1	attracting	: 1	logistics	: 1
force	: 1	discover	: 1	rate	: 1	cost	: 1
displays	: 1	pass	: 1	estimated	: 1	paintings	: 1
giving	: 1	decisions	: 1	specification	: 1	pijl	: 1
brief	: 1	experiment	: 1	supplies	: 1	relationships	: 1
exchange	: 1	learn	: 1	behaviour	: 1	operating	: 1
safer	: 1	invented	: 1	implicit	: 1	changed	: 1
natureq	: 1	action	: 1	conveniently	: 1	tasks	: 1

love	: 1	scales	: 1	psychological	: 1	texts	: 1
total	: 1	tools	: 1	select	: 1	i.e.	: 1
pcyber-physical	: 1	scenarios	: 1	program	: 1	therefore	: 1
taken	: 1	analysing	: 1	flying	: 1	aware	: 1
equipments	: 1	cases	: 1	hold	: 1	account	: 1
diverse	: 1	harmonious	: 1	values	: 1	challenging	: 1
expanding	: 1	preserving	: 1	originates	: 1	indicates	: 1
destination	: 1	worldview	: 1	unites	: 1	behave	: 1
answer	: 1	optimal	: 1	intelligent	: 1	economy	: 1
half-century	: 1	buildings	: 1	huge	: 1	m?a	: 1
after	: 1	mapping	: 1	questioning	: 1	panoramic	: 1
designed	: 1	meaningful	: 1	efficiently	: 1	changes	: 1
short	: 1	locates	: 1	third	: 1	light	: 1
separations	: 1	maintain	: 1	fundamental	: 1	retrieval	: 1
typical	: 1	operations	: 1	office	: 1	developed	: 1
pointed	: 1	move	: 1	displayed	: 1	mathematicians	: 1
designeros	: 1	statistical	: 1	documents	: 1	facilitates	: 1
nets	: 1	24	: 1	25	: 1	21	: 1
22	: 1	23	: 1	temporal	: 1	detected	: 1
pervade	: 1	bridged	: 1	2010	: 1	archival	: 1
them	: 1	views	: 1	food	: 1	introduce	: 1
break	: 1	effects	: 1	term	: 1	document	: 1
capability	: 1	realistic	: 1	reasonable	: 1	locate	: 1
instructionq	: 1	constraints	: 1	schemes	: 1	financial	: 1
significantly	: 1	accessible	: 1	intangible	: 1	expect	: 1
herbert	: 1	special	: 1	category	: 1	accomplish	: 1
entertainment	: 1	continually	: 1	transforming	: 1	safety	: 1
autopilot	: 1	classify/cluster/locate: 1	sensor	: 1	occurs	: 1
shows	: 1	foundation	: 1	retrieved	: 1	maintains	: 1
approaches	: 1	reasoning/navigation: 1	tags	: 1	derivation	: 1
could	: 1	correctness	: 1	feasible	: 1	turn	: 1
fruit	: 1	relational	: 1	facilitate	: 1	origin	: 1
features	: 1	probability	: 1	reflected	: 1	channels	: 1
directly	: 1	owner	: 1	privilege	: 1	electronic	: 1
city	: 1	little	: 1	publication	: 1	privacy	: 1
fiction	: 1	priority	: 1	station	: 1	accessed	: 1
final	: 1	insightful	: 1	building	: 1	copj	: 1
sensation	: 1	slides	: 1	environmental	: 1	reflecting	: 1
incur	: 1	authors	: 1	cooperate	: 1	population	: 1
11	: 1	10	: 1	isolation	: 1	second	: 1
patients	: 1	negatively	: 1	proactive	: 1	interests	: 1
addressing	: 1	weiser	: 1	explicit	: 1	dynamically	: 1
sometimes	: 1	need	: 1	exhibit	: 1	viewed	: 1
acceleration	: 1	built	: 1	studying	: 1	answering	: 1
mechanism	: 1	relatives	: 1	take	: 1	algorithms	: 1
added	: 1	allow	: 1	measures	: 1	intentions	: 1
connected	: 1	alarmed	: 1	why	: 1	peers	: 1
cause	: 1	especially	: 1	gather	: 1	order	: 1
managing	: 1	points	: 1	principle	: 1	pattern	: 1

predictable	: 1	senior	: 1	physics	: 1	notion	: 1
stones	: 1	incorporate	: 1	phenomenon	: 1	supported	: 1
bring	: 1	theories	: 1	participate	: 1	find	: 1
trying	: 1	well-being	: 1	situations	: 1	explain	: 1
heavily	: 1	distributed	: 1	should	: 1	jam	: 1
equipped	: 1	fuel	: 1	employed	: 1	importantly	: 1
awareness	: 1	his	: 1	express	: 1	overall	: 1
trees	: 1	made	: 1	unconsciously	: 1	areas	: 1
resolve	: 1	resource	: 1	17	: 1	textbooks	: 1
extends	: 1	tennenhouse	: 1	logistic	: 1	cycles	: 1
precaution	: 1	locating	: 1	consciously	: 1	knowing	: 1
requirement	: 1	motions	: 1	reference	: 1	enhanced	: 1
incorporating	: 1	capacity	: 1	ways	: 1	wot	: 1
away	: 1	currently	: 1	propagates	: 1	yet	: 1
boundaries	: 1	classes	: 1	correctly	: 1	developer	: 1
wide	: 1	preserve	: 1	publishers	: 1	we	: 1
follow	: 1	terms	: 1	importance	: 1	sold	: 1
supermarket	: 1	beyond	: 1	sub-healthy	: 1	next-generation	: 1
carbon	: 1	come	: 1	autonomous	: 1	monitor	: 1
undetermined	: 1	tangible	: 1	density	: 1	minds	: 1
sensitive	: 1	attributes	: 1	adapted	: 1	otherwise	: 1
pconnecting	: 1	reasons	: 1	superlink	: 1	height	: 1
variety	: 1	illness	: 1	maximize	: 1	factors	: 1
ensures	: 1	positively	: 1	cameras	: 1	basis	: 1
co-exist	: 1	quickly	: 1	locate/reason/navigate: 1		maintenance	: 1
navigate	: 1	collected	: 1	linguistic	: 1	featuring	: 1
waste	: 1	senses	: 1	reaction	: 1	route	: 1
concerning	: 1	gas	: 1	photos	: 1	coherent	: 1
present	: 1	audio	: 1	easier	: 1	aim	: 1
euclidean	: 1	reliability	: 1	designers	: 1	aspirations	: 1
engineers	: 1	hardware	: 1	embrace	: 1	non-material	: 1
attach	: 1	if	: 1	vivid	: 1	propagation	: 1
perform	: 1	harmony	: 1	contain	: 1	shuttle	: 1
hierarchies	: 1	several	: 1	higher	: 1	see	: 1
sensed	: 1	effectively	: 1	persons	: 1	respected	: 1
driven	: 1	investments	: 1	recent	: 1	internet-centric	: 1
scenario	: 1	programs	: 1	studies	: 1	page	: 1
fusion	: 1	person	: 1	without	: 1	solve	: 1
paradigm	: 1	sensing	: 1	drawing	: 1	unified	: 1
abilities	: 1	transmitting	: 1	photo	: 1	guided	: 1
actions	: 1	recycled	: 1	add/remove	: 1	cyber-physical-social: 1	
foresee	: 1	cyberspaceq	: 1	monitored	: 1	family	: 1
regarded	: 1	had	: 1	ideal	: 1	evidences	: 1
passive	: 1	treatment	: 1	close-loop	: 1	smart	: 1
explained	: 1	aspects	: 1	around	: 1	worlds	: 1
evaluate	: 1	digital	: 1	pnetworks	: 1	possible	: 1
early	: 1	simonos	: 1	grid	: 1	preference	: 1
unique	: 1	usually	: 1	advanced	: 1	guaranteed	: 1
envisioned	: 1	works	: 1	essential	: 1	empirically	: 1

```
fulfil             : 1    sketch          : 1    often             : 1    tells              : 1
competition        : 1    identified      : 1    experiments       : 1    towards            : 1
meters             : 1    evaluated       : 1    recommendation    : 1    home               : 1
generates          : 1    micro           : 1    maps              : 1    integration        : 1
whole              : 1    connecting      : 1    provides          : 1    innovation         : 1
transmitted        : 1    semantically    : 1    three             : 1    chains             : 1
coined             : 1    core            : 1    run               : 1    obey               : 1
minimization       : 1    expansion       : 1    doctors           : 1    although           : 1
fused              : 1    manufacturing   : 1    hilbert           : 1    limitation         : 1
extension          : 1    extending       : 1    coexist           : 1    identification     : 1
simulation         : 1    carries         : 1    greatly           : 1    own                : 1
propagate          : 1    efforts         : 1    introduced        : 1    road               : 1
software           : 1    computational   : 1    bridging          : 1    negative           : 1
recognize          : 1    very            : 1    roads             : 1    available          : 1
long               : 1    pages           : 1    low               : 1    mappings           : 1
tight              : 1    manufacturers   : 1    forming           : 1    extended           : 1
goals              : 1    cycle           : 1    removed           : 1    rebuilt            : 1
deployed           : 1    count           : 1    places            : 1    radio-frequency    : 1
us                 : 1    record          : 1    economic          : 1    demonstrate        : 1
multi-semantic     : 1    called          : 1    gone              : 1    vehicles           : 1
abstract           : 1    general         : 1    single            : 1    enable             : 1
our                : 1    education       : 1    happen            : 1    mathematic         : 1
mutual             : 1    avoided         : 1    ideally           : 1    no                 : 1
green              : 1    application     : 1    long-time         : 1    operationos        : 1
expected           : 1    explaining      : 1    elements          : 1    mutual-influence   : 1
students           : 1    cpsocio         : 1    state-of-the-art  : 1    ecological         : 1
authorities        : 1    privileges      : 1    ago               : 1    progresses         : 1
described          : 1    ranks           : 1    required          : 1    fuse               : 1
phumans            : 1    mass            : 1    2005              : 1    rural              : 1
once               : 1
```

WP_Fdic:

['and', 'CC']	: 306	['the', 'DT']	: 236	['of', 'IN']	: 173
['to', 'TO']	: 145	['space', 'NN']	: 112	['in', 'IN']	: 105
['be', 'VB']	: 66	['can', 'MD']	: 64	['physical', 'JJ']	: 59
['will', 'MD']	: 57	['is', 'VBZ']	: 57	['-rrb-', '-RRB-']	: 56
['-lrb-', '-LRB-']	: 56	['through', 'IN']	: 52	['individuals', 'NNS']	: 46
['spaces', 'NNS']	: 43	['-rsb-', 'NNS']	: 34	['from', 'IN']	: 31
['cyberspace', 'NN']	: 30	['with', 'IN']	: 30	['cyber-physical', 'NNP']	: 28
['humans', 'NNS']	: 27	['society', 'NNP']	: 27	['are', 'VBP']	: 27
['network', 'NN']	: 27	['or', 'CC']	: 26	['on', 'IN']	: 25
['cpsoc', 'NNP']	: 25	['for', 'IN']	: 25	['socio', 'NN']	: 25
['not', 'RB']	: 25	['different', 'JJ']	: 24	['data', 'NNS']	: 23
['society', 'NN']	: 22	['it', 'PRP']	: 22	['between', 'IN']	: 21
['semantic', 'JJ']	: 20	['-lsb-', 'CD']	: 20	['mental', 'JJ']	: 19
['energy', 'NN']	: 19	['social', 'JJ']	: 18	['human', 'JJ']	: 18
['-rsb-', 'CD']	: 17	['information', 'NN']	: 17	['as', 'IN']	: 17
['various', 'JJ']	: 17	['by', 'IN']	: 15	['also', 'RB']	: 15
['other', 'JJ']	: 15	['-lsb-', 'VBG']	: 15	['have', 'VBP']	: 15

['an', 'DT']	: 14	['thoughts', 'NNS']	: 13	['machines', 'NNS']	: 13
['complex', 'JJ']	: 13	['e.g.', 'NNP']	: 13	['that', 'WDT']	: 12
['development', 'NN']	: 12	['which', 'WDT']	: 12	['influence', 'NN']	: 12
['interaction', 'NN']	: 11	['laws', 'NNS']	: 11	['link', 'NN']	: 11
['but', 'CC']	: 11	['real-time', 'JJ']	: 11	['environment', 'NN']	: 11
['super-links', 'NNS']	: 11	['processes', 'NNS']	: 11	['networks', 'NNS']	: 11
['images', 'NNS']	: 10	['natural', 'JJ']	: 10	['that', 'IN']	: 10
['research', 'NN']	: 10	['principles', 'NNS']	: 10	['may', 'MD']	: 10
['material', 'NN']	: 10	['flow', 'NN']	: 10	['each', 'DT']	: 10
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['influence', 'VB']	: 9	['one', 'CD']	: 9	['some', 'DT']	: 9
['time', 'NN']	: 9	['new', 'JJ']	: 9	['their', 'PRP$']	: 9
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['according', 'VBG']	: 8	['needs', 'VBZ']	: 8	['cps', 'NNP']	: 8
['created', 'VBN']	: 8	['thought', 'NN']	: 7	['web', 'NNP']	: 7
['model', 'NN']	: 7	['technology', 'NN']	: 7	['life', 'NN']	: 7
['nature', 'NN']	: 7	['structure', 'NN']	: 7	['they', 'PRP']	: 7
['-lsb-', 'VBZ']	: 7	['measured', 'VBN']	: 7	['example', 'NN']	: 7
['process', 'NN']	: 7	['this', 'DT']	: 7	['human', 'NNP']	: 7
['was', 'VBD']	: 7	['individual', 'JJ']	: 7	['events', 'NNS']	: 7
['resources', 'NNS']	: 7	['multiple', 'JJ']	: 7	['link', 'VB']	: 7
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['number', 'NN']	: 6	['such', 'JJ']	: 6	['at', 'IN']	: 6
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['behaviours', 'VBZ']	: 1	['-lsb-', 'VB']	: 1	['express', 'VB']	: 1
['shows', 'VBZ']	: 1	['gas', 'NN']	: 1	['weiser', 'NNP']	: 1
['typical', 'JJ']	: 1	['meters', 'NNS']	: 1	['enable', 'VBP']	: 1
['history', 'VB']	: 1	['force', 'VB']	: 1	['internet-centric', 'NNP']	: 1
['equipped', 'VBN']	: 1	['feasible', 'JJ']	: 1	['called', 'VBD']	: 1
['perform', 'VB']	: 1	['unconsciously', 'JJ']	: 1	['half-century', 'NNS']	: 1
['digital', 'JJ']	: 1	['semantically', 'RB']	: 1	['simonos', 'NNP']	: 1
['micro', 'JJ']	: 1	['non-material', 'JJ']	: 1	['empirically', 'RB']	: 1
['intentions', 'NNS']	: 1	['publication', 'NN']	: 1	['towards', 'IN']	: 1
['multi-semantic', 'JJ']	: 1	['us', 'PRP']	: 1	['grid', 'NN']	: 1
['publishers', 'NNS']	: 1	['maintain', 'VB']	: 1	['physics', 'VBZ']	: 1
['means', 'VBZ']	: 1	['reliability', 'NN']	: 1	['regarded', 'VBN']	: 1
['aspirations', 'NNS']	: 1	['computing', 'VBG']	: 1	['density', 'NN']	: 1
['action', 'NN']	: 1	['distinguished', 'VBN']	: 1	['originates', 'VBZ']	: 1
['change', 'VBP']	: 1	['find', 'VB']	: 1	['separations', 'NNS']	: 1
['well-being', 'NN']	: 1	['individual', 'NNP']	: 1	['versatile', 'VB']	: 1
['predictable', 'JJ']	: 1	['engineering', 'VB']	: 1	['symbiosis', 'NNS']	: 1
['triangle', 'JJ']	: 1	['include', 'VBP']	: 1	['relatives', 'NNS']	: 1
['incur', 'VBP']	: 1	['foresee', 'VB']	: 1	['22', 'CD']	: 1
['overall', 'JJ']	: 1	['i.e.', 'FW']	: 1	['unites', 'VBZ']	: 1
['traffic', 'NNP']	: 1	['respected', 'JJ']	: 1	['mass', 'NN']	: 1

['safer', 'JJR']	: 1	['required', 'VBN']	: 1	['psychological', 'JJ']	: 1
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['learn', 'VB']	: 1	['integration', 'NN']	: 1	['accessed', 'VBN']	: 1
['forming', 'VBG']	: 1	['transmission', 'NN']	: 1	['views', 'NNS']	: 1
['turn', 'NN']	: 1	['road', 'NN']	: 1	['cross-space', 'VB']	: 1
['phenomenon', 'NN']	: 1	['locates', 'VBZ']	: 1	['acceleration', 'NN']	: 1
['unaware', 'JJ']	: 1	['recognize', 'VB']	: 1	['order', 'NN']	: 1
['weave', 'VB']	: 1	['ago', 'RB']	: 1	['stones', 'NNS']	: 1
['study', 'NNP']	: 1	['negative', 'JJ']	: 1	['efficiently', 'NNS']	: 1
['available', 'JJ']	: 1	['investments', 'NNS']	: 1	['points', 'NNS']	: 1
['quickly', 'RB']	: 1	['carbon', 'NN']	: 1	['should', 'MD']	: 1
['health', 'NNP']	: 1	['ideal', 'NN']	: 1	['proactive', 'NNP']	: 1
['away', 'RB']	: 1	['adapted', 'VBN']	: 1	['importance', 'NN']	: 1
['mappings', 'NNS']	: 1	['alarmed', 'JJ']	: 1	['archival', 'NN']	: 1
['temporal', 'JJ']	: 1	['proposed', 'VBD']	: 1	['come', 'VB']	: 1
['locating', 'VBG']	: 1	['science', 'VB']	: 1	['algorithms', 'NNS']	: 1
['euclidean', 'JJ']	: 1	['especially', 'RB']	: 1	['2010', 'CD']	: 1
['minds', 'NNS']	: 1	['specification', 'NN']	: 1	['11', 'CD']	: 1
['logistic', 'JJ']	: 1	['indicates', 'VBZ']	: 1	['exchange', 'NN']	: 1
['meaningful', 'JJ']	: 1	['copj', 'NNP']	: 1	['no', 'DT']	: 1
['introduce', 'VB']	: 1	['optimal', 'JJ']	: 1	['operate', 'VB']	: 1
['total', 'JJ']	: 1	['explain', 'VB']	: 1	['page', 'NN']	: 1
['aspects', 'NNS']	: 1	['life', 'NNP']	: 1	['trees', 'NNS']	: 1
['correctly', 'RB']	: 1	['light', 'JJ']	: 1	['created', 'VBD']	: 1
['significantly', 'RB']	: 1	['harmonious', 'JJ']	: 1	['recent', 'JJ']	: 1
['reaction', 'NN']	: 1	['destination', 'NN']	: 1	['continually', 'RB']	: 1
['single', 'JJ']	: 1	['classes', 'NNS']	: 1	['analysing', 'VBG']	: 1
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['ways', 'NNS']	: 1	['rural', 'JJ']	: 1	['count', 'VB']	: 1
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['methodology', 'VB']	: 1	['intelligence', 'NNP']	: 1	['scenarios', 'NNS']	: 1
['method', 'JJ']	: 1	['preference', 'NN']	: 1	['often', 'RB']	: 1
['obey', 'RB']	: 1	['motions', 'NNS']	: 1	['avoided', 'VBN']	: 1
['linguistic', 'JJ']	: 1	['humans', 'JJ']	: 1	['sensors', 'VBZ']	: 1
['engineers', 'NNS']	: 1	['detected', 'VBN']	: 1	['cross-space', 'JJ']	: 1
['unified', 'JJ']	: 1	['authorities', 'NNS']	: 1	['negatively', 'RB']	: 1
['extension', 'NNP']	: 1	['sub-healthy', 'JJ']	: 1	['promote', 'VB']	: 1
['tangible', 'JJ']	: 1	['owner', 'NN']	: 1	['changes', 'VBZ']	: 1
['although', 'IN']	: 1	['process', 'VB']	: 1	['scenario', 'NN']	: 1
['reflection', 'NN']	: 1	['coined', 'VBN']	: 1	['children', 'NNP']	: 1
['break', 'VB']	: 1	['shuttle', 'NN']	: 1	['natureq', 'NN']	: 1
['out', 'RB']	: 1	['environmental', 'JJ']	: 1	['hold', 'VB']	: 1
['introduced', 'VBN']	: 1	['complex', 'NN']	: 1	['facilitates', 'VBZ']	: 1
['cyber', 'JJ']	: 1	['reflexive', 'VBZ']	: 1	['minimization', 'NNS']	: 1
['lifetime', 'VBP']	: 1	['conveniently', 'VB']	: 1	['rate', 'NN']	: 1
['orthogonal', 'RB']	: 1	['abstract', 'JJ']	: 1	['sold', 'VBN']	: 1

```
['multi-dimensional', 'VBZ']      : 1    ['become', 'VBP']                : 1    ['use', 'VBP']              : 1
['social', 'NNP']                 : 1    ['if', 'IN']                     : 1    ['relational', 'JJ']        : 1
['dynamic', 'JJ']                 : 1    ['far', 'RB']                    : 1    ['displays', 'VBZ']         : 1
['maintains', 'VBZ']              : 1    ['experiments', 'NNS']           : 1    ['described', 'VBD']        : 1
['measures', 'NNS']               : 1    ['sometimes', 'RB']              : 1    ['means', 'NN']             : 1
['early', 'JJ']                   : 1    ['fusion', 'NN']                 : 1    ['pervade', 'VBP']          : 1
['sketch', 'VB']                  : 1    ['factors', 'NNS']               : 1    ['concept', 'VBG']          : 1
['change', 'NN']                  : 1    ['areas', 'NNS']                 : 1    ['multi-space', 'VB']       : 1
['his', 'PRP$']                   : 1    ['fusing', 'VBG']                : 1    ['economy', 'NN']           : 1
['sensed', 'JJ']                  : 1    ['interactive', 'VBZ']           : 1    ['privacy', 'NNP']          : 1
['locate', 'VB']                  : 1    ['treatment', 'NN']              : 1    ['forms', 'VBZ']            : 1
['unique', 'JJ']                  : 1    ['cross', 'JJ']                  : 1    ['influence', 'VBP']        : 1
['pages', 'NNS']                  : 1    ['results', 'NNS']               : 1    ['explicit', 'JJ']          : 1
['cyberspace', 'CD']              : 1    ['otherwise', 'RB']              : 1    ['expected', 'VBN']         : 1
['answer', 'VB']                  : 1    ['self-organized', 'VBN']        : 1    ['computation', 'NN']       : 1
['innovation', 'NN']              : 1    ['managing', 'VBG']              : 1    ['precaution', 'NN']        : 1
['interests', 'NNS']              : 1    ['need', 'VBP']                  : 1    ['senior', 'JJ']            : 1
['station', 'NN']                 : 1    ['distributed', 'VBN']           : 1    ['very', 'RB']              : 1
['expect', 'VB']                  : 1    ['requirement', 'NN']            : 1    ['city', 'NN']              : 1
['active', 'JJ']                  : 1    ['sensor', 'NN']                 : 1    ['allow', 'VBP']            : 1
['terms', 'NNS']                  : 1    ['office', 'NN']                 : 1    ['include', 'VB']           : 1
['control', 'VBP']                : 1    ['evaluated', 'VBN']             : 1    ['theories', 'NNS']         : 1
['greatly', 'RB']                 : 1    ['simulation', 'NN']             : 1    ['operations', 'NNS']       : 1
['out', 'IN']                     : 1    ['ideally', 'RB']                : 1    ['-rsb-', 'NN']             : 1
['attracting', 'VBG']             : 1    ['supermarket', 'NN']            : 1    ['aim', 'NN']               : 1
['support', 'NN']                 : 1    ['use', 'NN']                    : 1    ['concerning', 'VBG']       : 1
['fuel', 'NN']                    : 1    ['cameras', 'NNS']               : 1    ['mechanism', 'NN']         : 1
['machine-understandable', 'JJ']  : 1    ['view', 'VB']                   : 1    ['run', 'VB']               : 1
['cyber-physical-social', 'JJ']   : 1    ['radio-frequency', 'NNP']       : 1    ['isolation', 'NN']         : 1
['super-links', 'JJ']             : 1    ['changed', 'VBN']               : 1    ['demonstrate', 'VBP']      : 1
['behaviour', 'NN']               : 1    ['24', 'CD']                     : 1    ['had', 'VBD']              : 1
['work', 'VB']                    : 1    ['cyber-physical-socio', 'VB']   : 1    ['currently', 'RB']         : 1
['10', 'CD']                      : 1    ['under', 'IN']                  : 1    ['explanation', 'NNP']      : 1
['reasons', 'NNS']                : 1    ['live', 'VBP']                  : 1    ['supplies', 'NNS']         : 1
['access', 'NN']                  : 1    ['experiment', 'NN']             : 1    ['hardware', 'NN']          : 1
['gone', 'VBN']                   : 1    ['guided', 'VBN']                : 1    ['real-world', 'JJ']        : 1
['waste', 'NN']                   : 1    ['rule', 'NN']                   : 1    ['-rsb-', 'NNP']            : 1
['envisioned', 'VBN']             : 1    ['living', 'NN']                 : 1    ['patients', 'NNS']         : 1
['17', 'CD']                      : 1    ['cycle', 'NN']                  : 1    ['answering', 'VBG']        : 1
['beyond', 'IN']                  : 1    ['add/remove', 'JJ']             : 1    ['whole', 'JJ']             : 1
['25', 'CD']                      : 1    ['exhibit', 'VB']                : 1    ['approaches', 'NNS']       : 1
['correctness', 'NNS']            : 1    ['monitored', 'VBN']             : 1    ['connects', 'VBZ']         : 1
['connected', 'VBN']              : 1    ['provides', 'VBZ']              : 1    ['become', 'VBN']           : 1
['effects', 'NNS']                : 1    ['co-exist', 'VB']               : 1    ['works', 'VBZ']            : 1
['panoramic', 'JJ']               : 1    ['diverse', 'JJ']                : 1    ['symbiosis', 'NN']         : 1
['food', 'NN']                    : 1    ['priority', 'NN']               : 1    ['orthogonal', 'JJ']        : 1
['foundation', 'NN']              : 1    ['information', 'NNP']           : 1    ['retrieved', 'VBN']        : 1
['mutual-influence', 'NN']        : 1    ['huge', 'JJ']                   : 1    ['embrace', 'VB']           : 1
['pervasive', 'VBP']              : 1    ['select', 'VB']                 : 1    ['leave', 'VB']             : 1
```

```
['equipments', 'NNS']              : 1      ['links', 'VBZ']              : 1      ['mutual', 'JJ']        : 1
['ticket', 'NN']                   : 1      ['incorporating', 'VBG']      : 1      ['fulfil', 'VB']        : 1
['know', 'VBP']                    : 1      ['general', 'JJ']             : 1      ['ecological', 'JJ']    : 1
['program', 'NN']                  : 1      ['education', 'VB']           : 1      ['particular', 'JJ']    : 1
['superlink', 'NN']                : 1      ['contain', 'VB']            : 1      ['operationos', 'NNS']  : 1
['cross', 'NN']                    : 1      ['height', 'NN']              : 1      ['represent', 'VBP']    : 1
['search/surf/zoom', 'VB']         : 1      ['embedded', 'VBN']           : 1      ['vivid', 'JJ']         : 1
['computation', 'NNS']             : 1      ['dynamically', 'RB']         : 1      ['take', 'VB']          : 1
['relationships', 'NNS']           : 1      ['developed', 'VBN']          : 1      ['flying', 'VBG']       : 1
['probability', 'NN']              : 1      ['23', 'CD']                  : 1      ['expanding', 'VBG']    : 1
['support', 'VBP']                 : 1      ['follow', 'VBP']             : 1      ['present', 'NN']       : 1
['photo', 'NN']                    : 1      ['next-generation', 'JJ']     : 1
```

```
W_Pdic:
represent         : ['VB', 'VBP']              all                : ['DT']
concept           : ['NN', 'VBG']              semantic           : ['NNP', 'JJ']
limited           : ['VBN']                    keep               : ['VB']
particular        : ['JJ']                     dynamic            : ['JJ']
results           : ['NNS']                    existing           : ['VBG']
four              : ['CD']                     computation        : ['NN', 'NNS']
consists          : ['VBZ']                    machine-understandable: ['JJ']
fusing            : ['VBG']                    reasoning          : ['NN']
issues            : ['NNS']                    layers             : ['NNS']
simon             : ['NNP']                    calculate          : ['VB']
physiological     : ['JJ']                     promote            : ['VB']
search/surf/zoom  : ['VB']                     environment        : ['NN']
to                : ['TO']                     cpsoc              : ['NNP', 'NNS']
indicate          : ['VB']                     preserved          : ['VBN']
under             : ['IN']                     discovering        : ['VBG']
health            : ['NN', 'NNP']              nodes              : ['NNS']
include           : ['VBP', 'VB']              worth              : ['NN']
resources         : ['NNS', 'NNP']             certain            : ['JJ']
activities        : ['NNS']                    takes              : ['VBZ']
orthogonal        : ['JJ', 'RB']               far                : ['RB']
dynamicity        : ['NN']                     connects           : ['VBZ']
govern            : ['VBP']                    ticket             : ['NN']
exact             : ['JJ']                     common             : ['JJ']
transmission      : ['NN']                     graph-based        : ['JJ']
standards         : ['NNS']                    leave              : ['VB']
licklider         : ['NNP']                    spaces             : ['NNS']
science           : ['NN', 'NNP', 'VB']        enhance            : ['VB']
unaware           : ['JJ']                     attracting         : ['VBG']
logistics         : ['NNS']                    the                : ['DT']
revolution        : ['NN']                     force              : ['VB']
disciplines       : ['NNS']                    be                 : ['VB']
phones            : ['NNS']                    discover           : ['VB']
cyber             : ['JJ', 'NN']               past               : ['JJ', 'NN']
rate              : ['NN']                     cost               : ['NN']
video             : ['NN']                     displays           : ['VBZ']
```

```
pass            : ['VB']                      further        : ['RBR', 'RB']
dynamics        : ['NNS']                     estimated      : ['VBN']
machines        : ['NNS', 'NNPS']             cooperatively  : ['RB']
even            : ['RB']                      established    : ['VBN']
what            : ['WP']                      plays          : ['VBZ']
paintings       : ['NNS']                     giving         : ['VBG']
decisions       : ['NNS']                     specification  : ['NN']
pijl            : ['NN']                      brief          : ['JJ']
networks        : ['NNS']                     current        : ['JJ']
experiment      : ['NN']                      self-adaptive  : ['JJ']
symbiosis       : ['NNS', 'NN']               subspaces      : ['NNS']
scientists      : ['NNS']                     supplies       : ['NNS']
falling         : ['VBG']                     method         : ['NN', 'JJ']
relationships   : ['NNS']                     evolving       : ['VBG']
exchange        : ['NN']                      human          : ['JJ', 'NNP', 'NN']
learn           : ['VB']                      understanding  : ['NN', 'VBG']
behaviour       : ['NN']                      explore        : ['VB']
objects         : ['NNS']                     operating      : ['NN']
cyber-physical  : ['NNP', 'JJ']               separation     : ['NN']
others          : ['NNS']                     active         : ['NNP', 'JJ']
safer           : ['JJR']                     invented       : ['VBN']
implicit        : ['JJ']                      change         : ['VBP', 'VB', 'NN']
great           : ['JJ']                      healthy        : ['JJ']
involved        : ['VBN']                     study          : ['NN', 'VB', 'NNP']
changed         : ['VBN']                     experience     : ['NN']
natureq         : ['NN']                      social         : ['NNP', 'JJ']
action          : ['NN']                      conveniently   : ['VB']
suitable        : ['JJ']                      navigation     : ['NN']
tasks           : ['NNS']                     love           : ['NN']
apple           : ['NN']                      classification : ['NN']
scales          : ['NNS']                     manage         : ['VB']
psychological   : ['JJ']                      texts          : ['NNS']
total           : ['JJ']                      tools          : ['NNS']
select          : ['VB']                      languages      : ['NNS']
use             : ['VB', 'NN', 'VBP']         i.e.           : ['FW']
pcyber-physical : ['JJ']                      e.g.           : ['RB', 'NNP', 'NN']
consumption     : ['NN']                      contains       : ['VBZ']
two             : ['CD']                      by             : ['IN']
scenarios       : ['NNS']                     live           : ['VB', 'JJ', 'VBP']
program         : ['NN']                      therefore      : ['RB']
taken           : ['VBN']                     scope          : ['NN']
analysing       : ['VBG']                     type           : ['NN']
reflects        : ['VBZ']                     more           : ['JJR', 'RBR']
separated       : ['VBN']                     unhealthy      : ['JJ']
flying          : ['VBG']                     getting        : ['VBG']
about           : ['IN']                      aware          : ['JJ']
equipments      : ['NNS']                     real-time      : ['NNP', 'VB', 'JJ']
cases           : ['NNS']                     hold           : ['VB']
virtually       : ['RB']                      evolves        : ['VBZ']
```

account	: ['NN']		this	: ['DT']
self-organize	: ['VB', 'NN']		challenge	: ['NN']
work	: ['VB', 'NN']		pmachines	: ['NNS']
diverse	: ['JJ']		harmonious	: ['JJ']
values	: ['NNS']		can	: ['MD', 'JJ']
evolved	: ['VBN']		concepts	: ['NNS']
following	: ['VBG', 'JJ', 'NN']		making	: ['VBG']
example	: ['NN']		history	: ['NN', 'VB']
control	: ['NN', 'VBP']		challenging	: ['VBG']
links	: ['NNS', 'VBZ', 'NNP']		process	: ['VB', 'NN']
expanding	: ['VBG']		preserving	: ['NNP']
originates	: ['VBZ']		indicates	: ['VBZ']
sense	: ['VB', 'NN']		destination	: ['NN']
times	: ['NNS']		information	: ['NN', 'NNP']
needs	: ['VBZ']		requirements	: ['NNS']
worldview	: ['NN']		provide	: ['VB']
holds	: ['VBZ']		cross-space	: ['VB', 'JJ']
how	: ['WRB']		methodology	: ['NN', 'VB', 'NNP']
unites	: ['VBZ']		behave	: ['VB']
influences	: ['VBZ']		answer	: ['VB']
optimal	: ['JJ']		intelligent	: ['JJ']
economy	: ['NN']		half-century	: ['NNS']
co-evolve	: ['VB']		buildings	: ['NNS']
abstraction	: ['NN']		ubiquitous	: ['JJ']
description	: ['NN']		huge	: ['JJ']
may	: ['MD']		m?a	: ['NN']
after	: ['IN']		mapping	: ['VBG']
questioning	: ['VBG']		reflect	: ['VB']
panoramic	: ['JJ']		explored	: ['VBN']
designed	: ['VBN']		multiplication	: ['NN', 'VBP']
such	: ['JJ']		meaningful	: ['JJ']
types	: ['NNS']		efficiently	: ['NNS']
changes	: ['VBZ']		short	: ['JJ']
natural	: ['JJ']		locates	: ['VBZ']
third	: ['JJ']		communities	: ['NNS']
light	: ['JJ']		separations	: ['NNS']
super-links	: ['NNS', 'JJ']		rather	: ['RB']
maintain	: ['VB']		so	: ['IN', 'RB']
fundamental	: ['JJ']		keeps	: ['VBZ']
operate	: ['VBP', 'VB']		retrieval	: ['NN']
typical	: ['JJ']		operations	: ['NNS']
help	: ['VB']		office	: ['NN']
developed	: ['VBN']		pointed	: ['VBN']
move	: ['VB']		displayed	: ['VBN']
symbols	: ['NNS']		mathematicians	: ['NNS']
designeros	: ['JJ']		including	: ['VBG']
statistical	: ['JJ']		documents	: ['NNS']
existence	: ['NN']		facilitates	: ['VBZ']
still	: ['RB']		nets	: ['NNS']

```
its                  : ['PRP$']                         super-linked        : ['JJ', 'VBN']
24                   : ['CD']                            25                  : ['CD']
multi-dimensional    : ['JJ', 'VBZ']                     20                  : ['CD']
21                   : ['CD']                            22                  : ['CD']
23                   : ['CD']                            personal            : ['JJ']
temporal             : ['JJ']                            actually            : ['RB']
forms                : ['NNS', 'VBZ']                    detected            : ['VBN']
production           : ['NN']                            pervade             : ['VBP']
systems              : ['NNPS', 'NNS']                   bridged             : ['VBN']
2010                 : ['CD']                            archival            : ['NN']
finer                : ['NN']                            them                : ['PRP']
views                : ['NNS']                           food                : ['NN']
material             : ['NN']                            evolution           : ['NN']
introduce            : ['VB']                            number              : ['NN']
break                : ['VB']                            effects             : ['NNS']
they                 : ['PRP']                           not                 : ['RB']
realize              : ['VB']                            easily              : ['RB']
term                 : ['NN']                            document            : ['NN']
mental               : ['JJ']                            establishing        : ['VBG']
capability           : ['NN']                            realistic           : ['JJ']
-lsb-                : ['JJ', 'CD', 'VBG', 'VBZ', 'NNS', 'NN', 'NNP', 'VB']reasonable          : ['JJ']
each                 : ['DT']                            locate              : ['VB']
instructionq         : ['NNS']                           constraints         : ['NNS']
development          : ['NN']                            domain              : ['NN']
schemes              : ['NNS']                           financial           : ['JJ']
significantly        : ['RB']                            cyberspace          : ['NN', 'NNP', 'CD', '$']
generation           : ['NN']                            accessible          : ['JJ']
energy               : ['NN']                            hard                : ['JJ']
reduce               : ['VB']                            principles          : ['NNS']
society              : ['NNP', 'NN']                     intangible          : ['JJ']
expect               : ['VB']                            measure             : ['NN']
separating           : ['VBG']                           commonsense         : ['NNP']
operation            : ['NN']                            herbert             : ['NNP']
event                : ['NN']                            special             : ['JJ']
out                  : ['RP', 'RB', 'IN']                category            : ['NN']
living               : ['VBG', 'JJ', 'NN']               accomplish          : ['VB']
actively             : ['RB']                            network             : ['NN', 'NNP']
entertainment        : ['NN']                            quality             : ['NN']
since                : ['IN']                            continually         : ['RB']
research             : ['NNP', 'NN']                     content             : ['NN']
transforming         : ['VBG']                           behaviours          : ['NNS', 'VBZ']
safety               : ['NN']                            internet            : ['NN']
autopilot            : ['VB']                            classify/cluster/locate: ['VB']
get                  : ['VB', 'VBP']                     sensor              : ['NN']
occurs               : ['VBZ']                           shows               : ['VBZ']
foundation           : ['NN']                            theory              : ['JJ', 'NN']
interactions         : ['NNS']                           retrieved           : ['VBN']
maintains            : ['VBZ']                            given               : ['VBN']
approaches           : ['NNS']                           formation           : ['NN']
```

reasoning/navigation:	['NN']		sensors	: ['NNS', 'VBZ']
tags	: ['NNS']		temperature	: ['NN']
definition	: ['NN']		interaction	: ['NN', 'NNP']
derivation	: ['VBN']		language	: ['NN']
created	: ['VBN', 'VBD']		where	: ['WRB']
could	: ['MD']		computers	: ['NNS']
correctness	: ['NNS']		feasible	: ['JJ']
motion	: ['NN']		turn	: ['NN']
fruit	: ['NN']		due	: ['JJ']
relational	: ['JJ']		view	: ['VB', 'NN']
facilitate	: ['VB']		think	: ['VB']
first	: ['JJ']		origin	: ['NN']
major	: ['JJ']		organize	: ['VB']
features	: ['NNS']		probability	: ['NN']
feel	: ['VB']		reflected	: ['VBN']
one	: ['CD', 'NN']		channels	: ['NNS']
will	: ['MD']		directly	: ['RB']
owner	: ['NN']		privilege	: ['NN']
electronic	: ['JJ']		city	: ['NN']
little	: ['JJ']		publication	: ['NN']
service	: ['NN']		privacy	: ['NNP']
data	: ['NN', 'NNS', 'NNP']		interact	: ['VB', 'NN']
structured	: ['VBN']		system	: ['NN', 'NNP']
relations	: ['NNS']		fiction	: ['NN']
priority	: ['NN']		their	: ['PRP$']
station	: ['NN']		accessed	: ['VBN']
time	: ['NN']		weave	: ['JJ', 'VBD', 'VB']
structures	: ['NNS', 'VBZ']		final	: ['JJ']
insightful	: ['JJ']		pervasive	: ['VBP', 'JJ']
exploring	: ['NNP', 'VBG']		building	: ['VBG']
big	: ['JJ']		that	: ['WDT', 'IN']
copj	: ['NNP']		explanation	: ['NN', 'NNP']
sensation	: ['NN']		slides	: ['NNS']
environmental	: ['JJ']		reflecting	: ['VBG']
incur	: ['VBP']		authors	: ['NNS']
cooperate	: ['VB']		than	: ['IN']
symptom	: ['NN']		population	: ['NN']
11	: ['CD']		10	: ['CD']
13	: ['CD']		12	: ['CD']
15	: ['CD']		14	: ['CD']
roles	: ['NNS']		16	: ['CD']
19	: ['CD']		isolation	: ['NN']
tree	: ['NN']		second	: ['JJ']
patients	: ['NNS']		future	: ['JJ', 'NN']
historical	: ['JJ']		were	: ['VBD']
design	: ['NN']		negatively	: ['RB']
enables	: ['VBZ']		distinguished	: ['VBN', 'JJ']
proactive	: ['NNP']		are	: ['VBP']
collecting	: ['VBG']		interests	: ['NNS']

addressing	: ['JJ']		weiser	: ['NNP']
viewer	: ['NN']		explicit	: ['JJ']
dynamically	: ['RB']		modern	: ['NNP']
mind	: ['NN']		sometimes	: ['RB']
socio	: ['NN', 'JJ', 'NNP']		have	: ['VBP', 'VB']
need	: ['VBP']		exhibit	: ['VB']
linked	: ['VBN']		viewed	: ['VBN']
acceleration	: ['NN']		issue	: ['NN']
built	: ['VBN']		patterns	: ['NNS']
efficient	: ['JJ']		studying	: ['VBG']
answering	: ['VBG']		able	: ['JJ']
gravity	: ['NN']		mechanism	: ['NN']
also	: ['RB']		relatives	: ['NNS']
concerns	: ['VBZ']		take	: ['VB']
which	: ['WDT']		transmit	: ['VB']
algorithms	: ['NNS']		techniques	: ['NNS']
play	: ['VB']		added	: ['VBN']
multiple	: ['JJ']		allow	: ['VBP']
measures	: ['NNS']		intentions	: ['NNS']
connected	: ['VBN']		but	: ['CC']
services	: ['NNS']		on-demand	: ['JJ']
alarmed	: ['JJ']		measured	: ['VBN']
why	: ['NNP']		peers	: ['NNS']
cause	: ['NN']		artefacts	: ['NNS']
especially	: ['RB']		mobile	: ['JJ']
gather	: ['VB']		flow	: ['NN']
order	: ['NN']		traditional	: ['JJ']
managing	: ['VBG']		points	: ['NNS']
principle	: ['JJ']		pattern	: ['NN']
predictable	: ['JJ']		senior	: ['JJ']
physics	: ['VBZ']		notion	: ['NN']
meaning	: ['NN']		laws	: ['NNS']
stones	: ['NNS']		incorporate	: ['VB']
phenomenon	: ['NN']		text	: ['NN']
supported	: ['VBN']		designer	: ['NN']
bring	: ['VB']		theories	: ['NNS']
relation	: ['NN']		artificial	: ['JJ']
participate	: ['VB']		dimension	: ['NN']
find	: ['VB']		access	: ['VB', 'NN']
trying	: ['VBG']		based	: ['VBN']
knowledge	: ['NN', 'NNP']		well-being	: ['NN']
situations	: ['NNS']		explain	: ['VB']
heavily	: ['RB']		distributed	: ['VBN']
should	: ['MD']		appropriate	: ['JJ']
being	: ['VBG']		only	: ['JJ', 'RB']
jam	: ['NNP']		semantics	: ['NNS']
rich	: ['JJ']		equipped	: ['VBN']
fuel	: ['NN']		employed	: ['VBN']
importantly	: ['RB']		over	: ['IN']

awareness	: ['NN']		do	: ['VBP']
his	: ['PRP$']		triangle	: ['JJ', 'NN']
cooperation	: ['NN']		means	: ['NN', 'VBZ']
etc.	: ['FW']		express	: ['VB']
overall	: ['JJ']		trees	: ['NNS']
made	: ['VBN']		unconsciously	: ['JJ']
new	: ['JJ', 'NNP']		areas	: ['NNS']
processes	: ['NNS']		resolve	: ['VB']
resource	: ['NNP']		17	: ['CD']
textbooks	: ['NNS']		statuses	: ['NNS']
extends	: ['VBZ']		consisting	: ['VBG']
tennenhouse	: ['NNP']		architecture	: ['NN']
logistic	: ['JJ']		18	: ['CD']
sustainable	: ['JJ']		through	: ['IN']
cycles	: ['NNS']		precaution	: ['NN']
locating	: ['VBG']		consciously	: ['JJ']
knowing	: ['VBG']		requirement	: ['NN']
motions	: ['NNS']		reference	: ['NN']
intelligence	: ['NNP', 'NN']		humans	: ['NNS', 'JJ']
culture	: ['NN', 'VB']		depends	: ['VBZ']
computer	: ['NN']		result	: ['NN']
enhanced	: ['VBN']		parking	: ['NN']
-rsb-	: ['NNS', 'CD', 'JJ', 'NN', 'NNP']	incorporating	: ['VBG']
concern	: ['NN']		evaluation	: ['NN']
capacity	: ['NN']		interacting	: ['VBG']
ways	: ['NNS']		wot	: ['NNP']
away	: ['RB']		currently	: ['RB']
versatile	: ['JJ', 'VB']		propagates	: ['VBZ']
yet	: ['RB']		boundaries	: ['NNS']
classes	: ['NNS']		various	: ['JJ']
correctly	: ['RB']		between	: ['IN']
progress	: ['NN']		developer	: ['NN']
wide	: ['NNP']		preserve	: ['VB']
publishers	: ['NNS']		we	: ['PRP']
follow	: ['VBP']		terms	: ['NNS']
ability	: ['NN']		extend	: ['VB']
nature	: ['NN']		importance	: ['NN']
sold	: ['VBN']		however	: ['RB']
supermarket	: ['NN']		beyond	: ['IN']
sub-healthy	: ['JJ']		extent	: ['NN']
next-generation	: ['JJ']		carbon	: ['NN']
cities	: ['NNS']		come	: ['VB']
autonomous	: ['JJ']		monitor	: ['VBP']
undetermined	: ['JJ']		both	: ['DT']
essentially	: ['RB']		tangible	: ['JJ']
many	: ['JJ']		density	: ['NN']
space	: ['NN', 'NNP']		minds	: ['NNS']
sensitive	: ['JJ']		context	: ['NN']
attributes	: ['NNS']		interactive	: ['JJ', 'VBZ']

```
adapted              : ['VBN']                          otherwise         : ['RB']
and                  : ['CC', 'VB']                     relevant          : ['JJ']
pconnecting          : ['VBG']                          large-scale       : ['JJ']
reasons              : ['NNS']                          effective         : ['JJ']
superlink            : ['NN']                           community         : ['NN']
height               : ['NN']                           key               : ['JJ']
variety              : ['NN']                           illness           : ['NN']
maximize             : ['VB']                           factors           : ['NNS']
considering          : ['VBG']                          ensures           : ['VBZ']
positively           : ['RB']                           cameras           : ['NNS']
basis                : ['NN']                           create            : ['VB']
computing            : ['NN', 'NNP', 'VBG']             co-exist          : ['VB']
been                 : ['VBN']                          quickly           : ['RB']
locate/reason/navigate: ['VB']                            maintenance      : ['NN']
navigate             : ['VB']                           collected         : ['VBN']
linguistic           : ['JJ']                           featuring         : ['VBG']
waste                : ['NN']                           fig               : ['VB']
life                 : ['NN', 'NNP']                    senses            : ['NNS']
self-organized       : ['VBN', 'JJ']                    reaction          : ['NN']
route                : ['NN']                           concerning        : ['VBG']
formed               : ['VBN']                          gas               : ['NN']
modelling            : ['VBG', 'JJ', 'NNP', 'NN']       gap               : ['NN']
photos               : ['NNS']                          coherent          : ['JJ']
observe              : ['VB']                           understand        : ['VB']
demand               : ['NN']                           an                : ['DT']
present              : ['NN']                           audio             : ['NN']
critical             : ['JJ']                           developing        : ['VBG']
these                : ['DT']                           engineering       : ['NN', 'VB']
value                : ['NN']                           easier            : ['JJR']
aim                  : ['NN']                           euclidean         : ['JJ']
while                : ['IN']                           reliability       : ['NN']
designers            : ['NNS']                          situation         : ['NN']
aspirations          : ['NNS']                          loop              : ['NN']
engineers            : ['NNS']                          represents        : ['VBZ']
layer                : ['VBG', 'NN']                    characteristics   : ['NNS']
is                   : ['VBZ']                          it                : ['PRP']
according            : ['VBG']                          hardware          : ['NN']
itself               : ['PRP']                          embrace           : ['VB']
in                   : ['IN']                           non-material      : ['JJ']
technology           : ['NN']                           attach            : ['VB']
if                   : ['IN']                           different         : ['JJ', 'VBG']
develop              : ['VB', 'VBP']                    vivid             : ['JJ']
propagation          : ['NN']                           perform           : ['VB']
things               : ['NNS']                          make              : ['VB', 'VBP']
belong               : ['VBP']                          cross             : ['NN', 'VBP', 'JJ']
who                  : ['WP']                           any               : ['DT']
rules                : ['NNS']                           another           : ['DT']
complex              : ['JJ', 'NN']                     harmony           : ['NN']
contain              : ['VB']                           shuttle           : ['NN']
```

hierarchies	:	['NNS']	several	:	['JJ']
events	:	['NNS']	higher	:	['JJR']
status	:	['NN']	evolve	:	['VB']
used	:	['VBN', 'VBD']	super-link	:	['JJ', 'NN', 'VB']
see	:	['VB']	sensed	:	['JJ']
iot	:	['NNP']	effect	:	['NN']
flows	:	['NNS']	effectively	:	['RB']
persons	:	['NNS']	respected	:	['JJ']
levels	:	['NNS']	driven	:	['VBN']
changing	:	['VBG']	investments	:	['NNS']
thoughts	:	['NNS']	recent	:	['JJ']
relies	:	['VBZ']	supports	:	['VBZ']
internet-centric	:	['NNP']	reflection	:	['VB', 'NN']
scenario	:	['NN']	programs	:	['NNS']
minimize	:	['VB']	studies	:	['NNS']
page	:	['NN']	well	:	['RB']
fusion	:	['NN']	obviously	:	['RB']
thought	:	['VBN', 'NN', 'VBD']	person	:	['NN']
without	:	['IN']	solve	:	['VB']
components	:	['NNS']	actuators	:	['NNS']
coordinate	:	['VB']	traffic	:	['NN', 'NNP']
model	:	['NNP', 'NN']	paradigm	:	['NN']
sensing	:	['NN']	drawing	:	['VBG']
bodies	:	['NNS']	know	:	['VB', 'VBP']
unified	:	['JJ']	abilities	:	['NNS']
just	:	['RB']	among	:	['IN']
transmitting	:	['VBG']	photo	:	['NN']
guided	:	['VBN']	obtain	:	['VB']
actions	:	['NNS']	ideas	:	['NNS']
recycled	:	['VBN']	add/remove	:	['JJ']
using	:	['VBG']	cyber-physical-social:		['JJ']
foresee	:	['VB']	applications	:	['NNS']
coordination	:	['NN']	captured	:	['VBN']
previous	:	['JJ']	web	:	['NNP', 'NN']
cyberspaceq	:	['NN']	depicts	:	['VBZ']
monitored	:	['VBN']	family	:	['NN']
sciences	:	['NNS', 'NNPS']	regarded	:	['VBN']
point	:	['NN']	had	:	['VBD']
ideal	:	['NN']	evidences	:	['NNS']
passive	:	['JJ']	potential	:	['JJ']
parents	:	['NNS']	treatment	:	['NN']
close-loop	:	['NN']	has	:	['VBZ']
human?machine	:	['JJ']	transformation	:	['NN', 'VBD']
smart	:	['NNP']	interconnection	:	['NN']
real	:	['JJ']	explained	:	['VBN']
aspects	:	['NNS']	around	:	['IN']
worlds	:	['NNS']	read	:	['VB']
evaluate	:	['VB']	digital	:	['JJ']
pnetworks	:	['NNS']	possible	:	['JJ']

```
early             : ['JJ']              cultural         : ['JJ']
simonos           : ['NNP']             grid             : ['NN']
preference        : ['NN']              world            : ['NN', 'NNP']
unique            : ['JJ']              usually          : ['RB']
advanced          : ['VBN']             guaranteed       : ['VBN']
harmoniously      : ['RB', 'NN']        phenomena        : ['NNS']
necessary         : ['JJ']              like             : ['IN', 'JJ']
envisioned        : ['VBN']             facets           : ['NNS']
specific          : ['JJ']              collect          : ['VB']
individuals       : ['NNS']             become           : ['VBN', 'VBP']
security          : ['NN']              works            : ['VBZ']
essential         : ['JJ']              empirically      : ['RB']
fulfil            : ['VB']              sketch           : ['VB']
because           : ['RB', 'IN']        often            : ['RB']
people            : ['NNS']             tells            : ['VBZ']
some              : ['DT']              competition      : ['NN']
identified        : ['VBD']             experiments      : ['NNS']
towards           : ['IN']              meters           : ['NNS']
evaluated         : ['VBN']             recommendation   : ['NN']
images            : ['NNS']             home             : ['NN']
generates         : ['VBZ']             man              : ['NN']
gradually         : ['RB']              dimensions       : ['NNS']
for               : ['IN']              micro            : ['JJ']
establish         : ['VB']              maps             : ['NNS']
integration       : ['NN']              whole            : ['JJ']
models            : ['NNS']             machine          : ['NN']
connecting        : ['VBG']             provides         : ['VBZ']
innovation        : ['NN']              transmitted      : ['VBN']
semantically      : ['RB']              three            : ['CD']
chains            : ['NNS']             coined           : ['VBN']
core              : ['NN']              object           : ['NN']
run               : ['VB']              obey             : ['RB']
minimization      : ['NNS']             real-world       : ['NN', 'JJ']
communicate       : ['VB']              expansion        : ['NN']
doctors           : ['NNS']             although         : ['IN']
fused             : ['VBN']             manufacturing    : ['NN']
hilbert           : ['NN']              stage            : ['NN']
on                : ['IN']              limitation       : ['NN']
carried           : ['VBN']             extension        : ['NNP']
extending         : ['VBG']             coexist          : ['VBP']
of                : ['IN']              identification   : ['NNP']
location          : ['NN']              simulation       : ['NN']
carries           : ['VBZ']             ensure           : ['VB']
greatly           : ['RB']              own              : ['JJ']
propagate         : ['VBP']             efforts          : ['NNS']
introduced        : ['VBN']             or               : ['CC']
road              : ['NN']              software         : ['NN']
mathematical      : ['JJ']              artefact         : ['NN', 'JJ']
computational     : ['JJ']              presence         : ['NN']
```

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communication    : ['NN']                        into              : ['IN']
within           : ['IN']                         bridging          : ['VBG']
negative         : ['JJ']                         recognize         : ['VB']
children         : ['NNP', 'NNS']                 beings            : ['NNS']
very             : ['RB']                         roads             : ['NNS']
pre-designed     : ['VBN', 'JJ']                  centrality        : ['NN']
methods          : ['NNS']                        networking        : ['NN']
devices          : ['NNS']                        cyber-physical-socio: ['NNP', 'VB']
before           : ['IN']                         support           : ['NN', 'VBP']
there            : ['EX']                         available         : ['JJ']
transform        : ['VB']                         long              : ['JJ']
pages            : ['NNS']                         influencing       : ['VBG']
low              : ['JJ']                          way               : ['NN']
mappings         : ['NNS']                         scientific        : ['JJ', 'NNP']
was              : ['VBD']                         materials         : ['NNS']
function         : ['NN']                          tight             : ['JJ']
from             : ['IN']                          form              : ['NN', 'VB', 'VBP']
manufacturers    : ['NNS']                         forming           : ['VBG']
basic            : ['JJ']                          extended          : ['VBN']
idea             : ['NN']                          pj                : ['NN']
link             : ['NNP', 'VB', 'NN']             goals             : ['NNS']
cycle            : ['NN']                          -lrb-             : ['-LRB-']
technologies     : ['NNS']                         removed           : ['VBN']
with             : ['IN']                          rebuilt           : ['VBN']
deployed         : ['VBN']                         count             : ['VB']
multi-space      : ['JJ', 'VB']                    pi                : ['NN']
places           : ['NNS']                         radio-frequency   : ['NNP']
us               : ['PRP']                         aeroplanes        : ['NNS']
record           : ['VB']                          economic          : ['JJ']
reflexive        : ['VBZ', 'JJ']                   embedded          : ['JJ', 'VBN']
demonstrate      : ['VBP']                         multi-semantic    : ['JJ']
similar          : ['JJ']                          called            : ['VBD']
connect          : ['VB', 'VBP']                   gone              : ['VBN']
vehicles         : ['NNPS']                        -rrb-             : ['-RRB-']
abstract         : ['JJ']                          influence         : ['NN', 'VB', 'NNP', 'VBP']
general          : ['JJ']                          imagination       : ['NN']
single           : ['JJ']                          enable            : ['VBP']
at               : ['IN']                          our               : ['PRP$']
lifetime         : ['NN', 'VBP']                   education         : ['VB']
happen           : ['VBP']                         as                : ['IN', 'RB']
physical         : ['JJ', 'VBG']                   mathematic        : ['JJ']
mutual           : ['JJ']                          avoided           : ['VBN']
ideally          : ['RB']                          no                : ['DT']
image            : ['NN']                          when              : ['WRB']
green            : ['NNP']                         virtual           : ['JJ']
application      : ['NN']                          build             : ['VB']
other            : ['JJ']                          role              : ['NN']
papers           : ['NNS']                         long-time         : ['JJ']
operationos      : ['NNS']                         optimization      : ['JJ', 'NN']
```

```
expected      : ['VBN']              node            : ['NN']
explaining    : ['VBG']              elements        : ['NNS']
users         : ['NNS']              mutual-influence : ['NN']
students      : ['NNS']              cpsocio         : ['NNP']
symbol        : ['NN']               state-of-the-art : ['JJ']
problems      : ['NNS']              robots          : ['NNS']
ecological    : ['JJ']               important       : ['JJ']
authorities   : ['NNS']              privileges      : ['NNS']
structure     : ['NN']               ago             : ['RB']
progresses    : ['VBZ']              individual      : ['JJ', 'NNP', 'NN']
lead          : ['VB']               described       : ['VBD']
zooming       : ['NN', 'VBG']        ranks           : ['NNS']
proposed      : ['VBN', 'VBD']       required        : ['VBN']
fuse          : ['VB']               phumans         : ['NNS']
rule          : ['VB', 'NN']         mass            : ['NN']
2005          : ['CD']               rural           : ['JJ']
cps           : ['NNP']              decision        : ['NNP', 'NN']
once          : ['RB']
```