

AII

2017 7





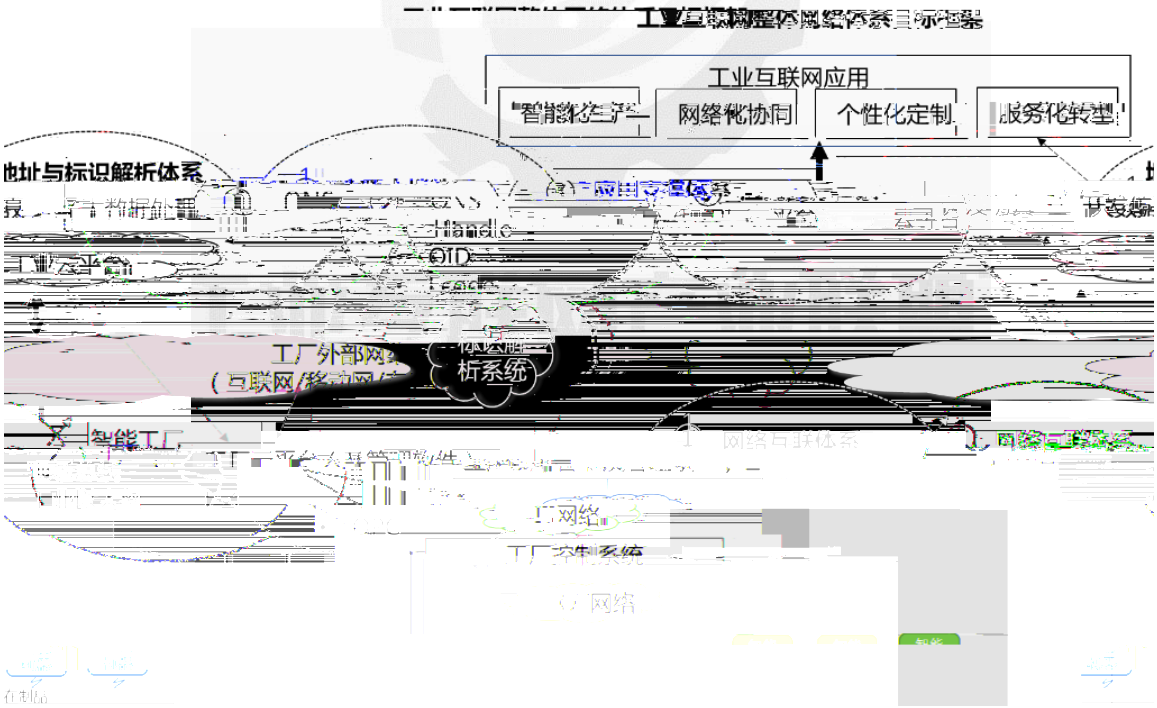



RFID








工业互联网应用
网络化协同
个性化定制
Handle
OID
工厂外部网
(互联网/移动网
析系统
智能工厂
工厂内网络
网络

IT OT

TI OT /



PatentStrategies

2016 [1]

- PROFINET Ethernet/IP

2015 2016

OPC/OPCUA

- Handle ONS

  ONS Handle

  OID Ecode

- 

1.

5671

1997

2010

600

2-1-1



2-1-2

45% 21%

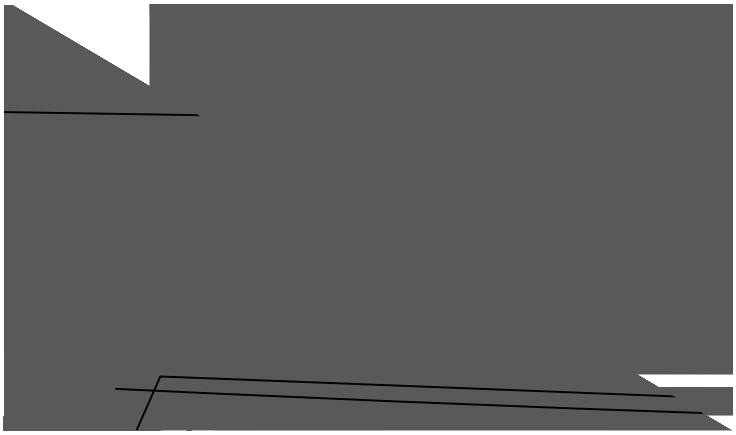
Siemens PROFIBUS

PROFINET ROCKWEll Devicenet Ethernet/Ip Siemens

ROCKWEll



PROFINET



2-1-3

1573

2001 2011 2015

200 2016



40% 23%



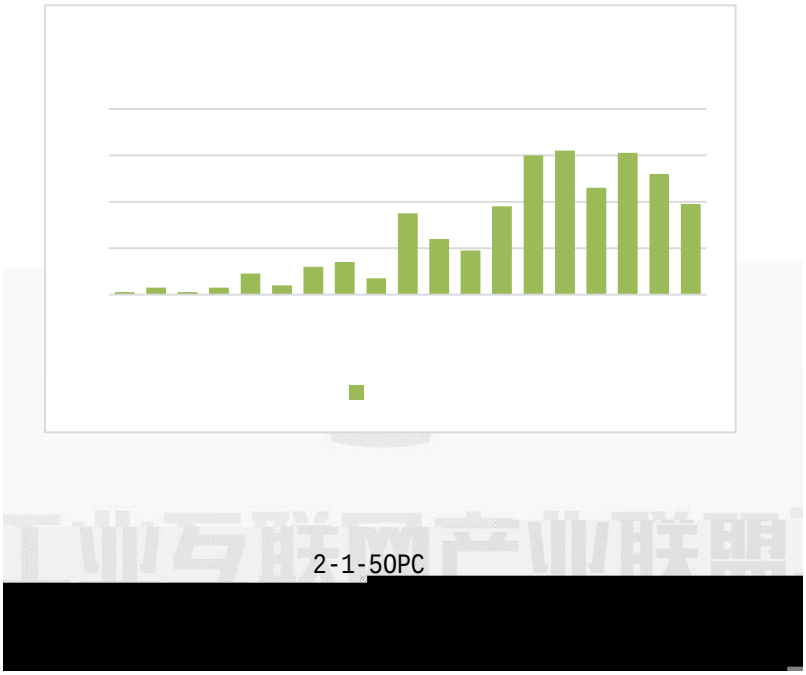
3.OPC/OPC UA

OPC 1998 OPC

Windows 1998-2007

OPA UA 2007

40



2-1-5OPC

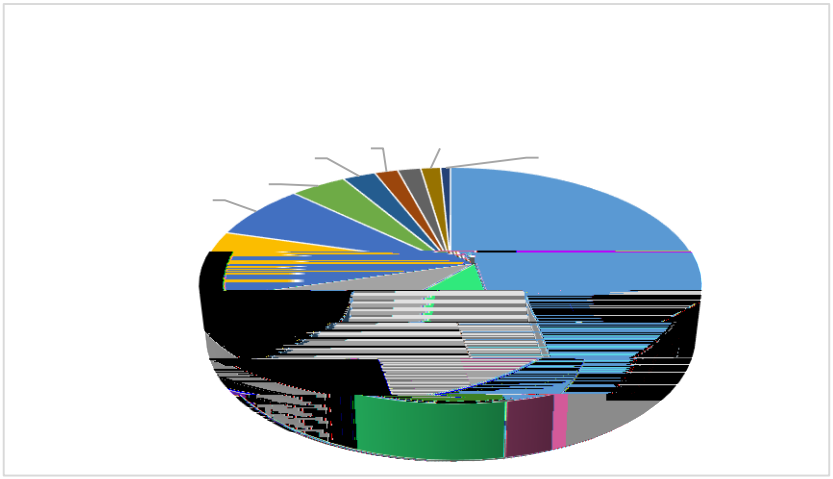
47% OPC

14% WIPO

OPC

OPC OPC UA OPC

2008



2-1-6 OPC

Siemens ABB GE EMERSON FISHER-ROSEMOUNT BOSCH ROCKWEll OPC ABB Siemens OPC

[redacted]

Siemens ABB

2-1-7 OPC OPC UA

OPC UA 2008 ABB OPC UA

OPC

OPC UA Siemens ABB



OPC UA OPC UA

OPC UA OPC UA

1.ONS



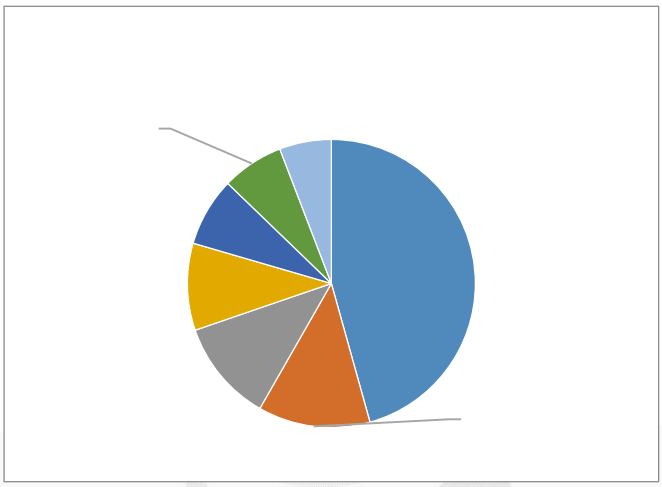
2-2-1 ONS

ONS DNS ONS

532 257 2005

ONS 2012 2013

ONS



2-2-3 ONS

GE

(IIC)

Cisco

ONS 80 IBM

ONS 70

ONS

ONS



Handle

Handle



2-2-5 Handle

CONTENT DIRECTIONS

AMERICAN EXPRESS TRAVEL RELATE

Handle

3.OID

Object identifier, OID ISO/IEC ITU

OID

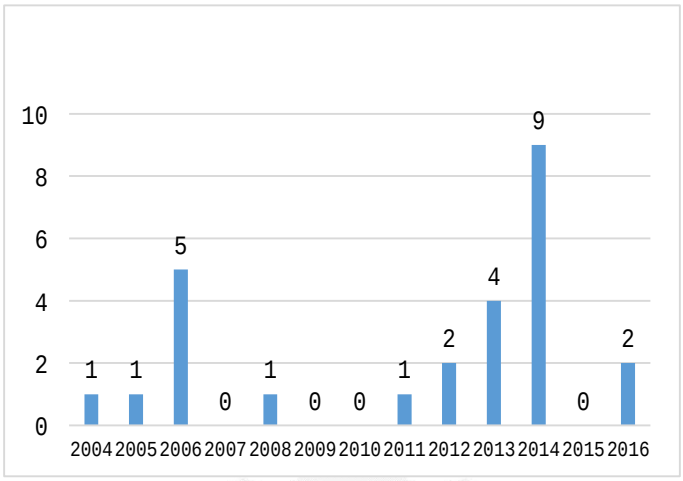
2016 5 , OID 954393 OID

RFID 3GPP



56

2-2-6 OID



2-2-7 OID

2015 “ OID ”

ITU-T

OID 26 24

OID 2004 OID

OID

ISO ISO-ITU

(JOINT-ISO-ITU-T) ITU-T ISO ISO-ITU

OID

2-2-8 OID

OID 37%

21%

OID OID



ETRI 14 ULTRATA

12

RFID

OID RFID

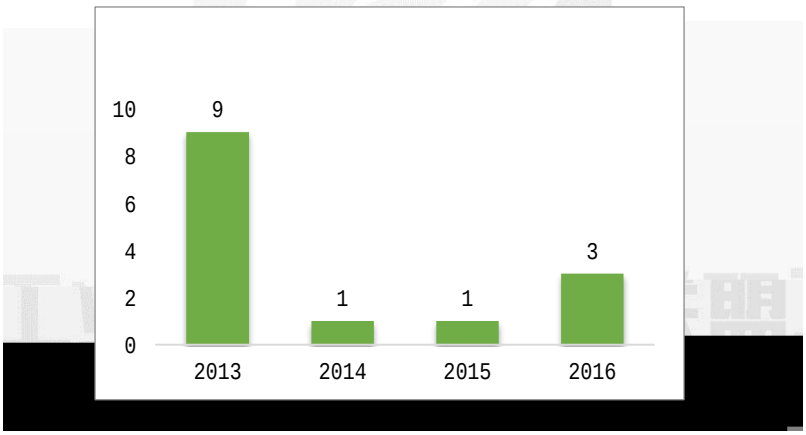
OID

4.Ecode

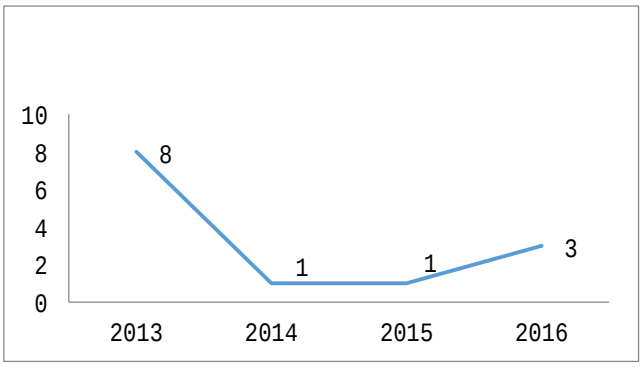
Ecode

Ecode 22 14 Ecode

2013



2-2-9 Ecode



2-2-10 Ecode

Ecode 20 13

Ecode

4.

Ecode Ecode



Ecode

2 Ecode

NoSQL

HDFS HAWQ Impala Presto Drill Spark Hive Pheonix

Mathworks SAS

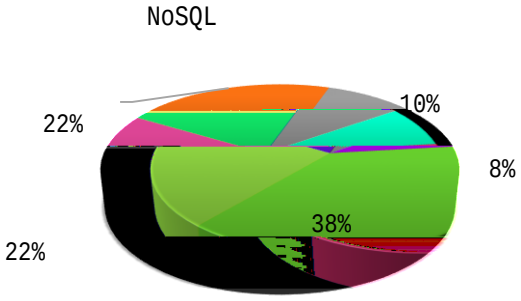
SAP VMware

Pivotal



1.




NoSQL
10%
22%
8%
38%
22%



Hive
Spark
Imala 
Drill

HAWQ
Pheonix





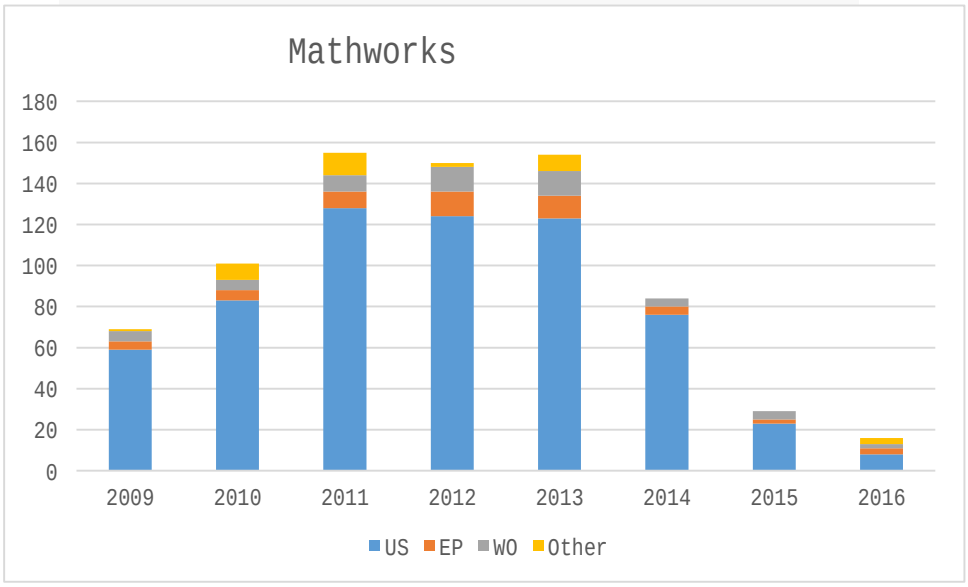




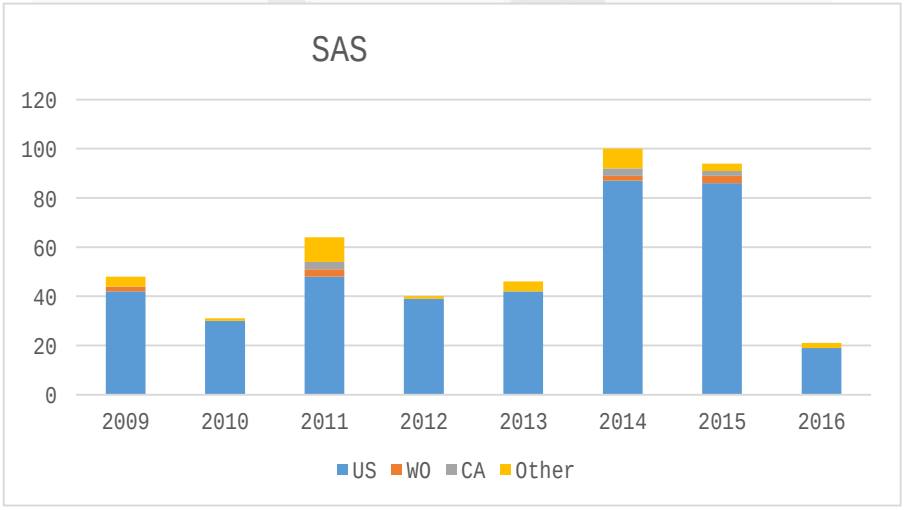




3.

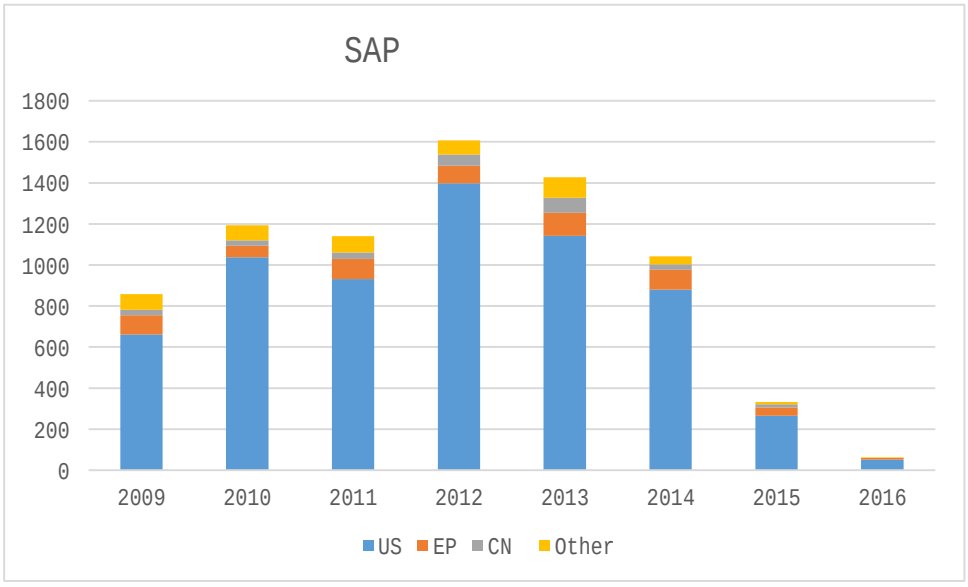


2-3-7 Mathworks


SAS
120
100
80
60
40
20
0
2009
2010
2011
2012
2013
2014
2015
2016
US
WO
CA
Other

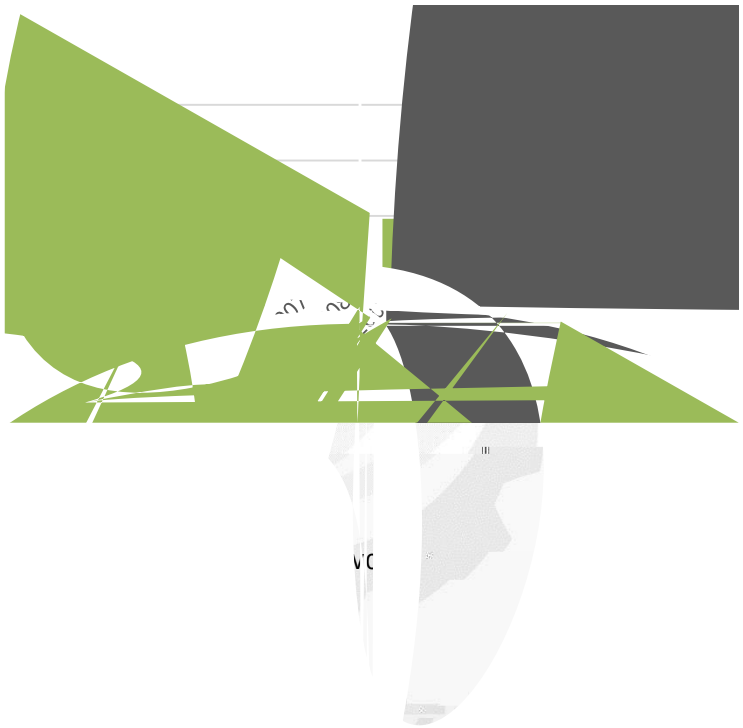
2-3-8 SAS




SAP
1800
1600
1400
1200
1000
800
600
400
200
0
2009
2010
2011
2012
2013
2014
2015
2016
US
EP
CN
Other

2-3-9 SAP

4.



ware

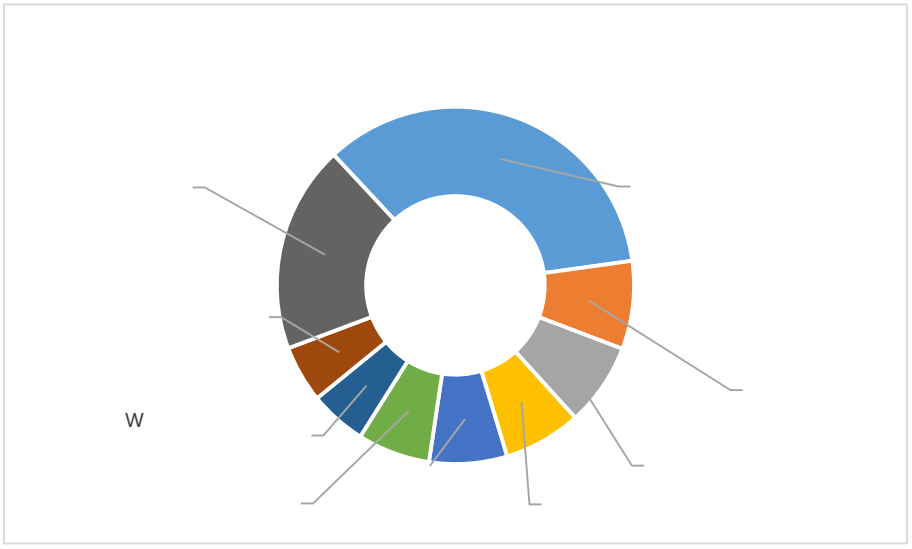
2014

40

85% 1%

Pivotal





2-3-12 Pivotal IPC

VMware

PaaS Cloud Foundry1.0



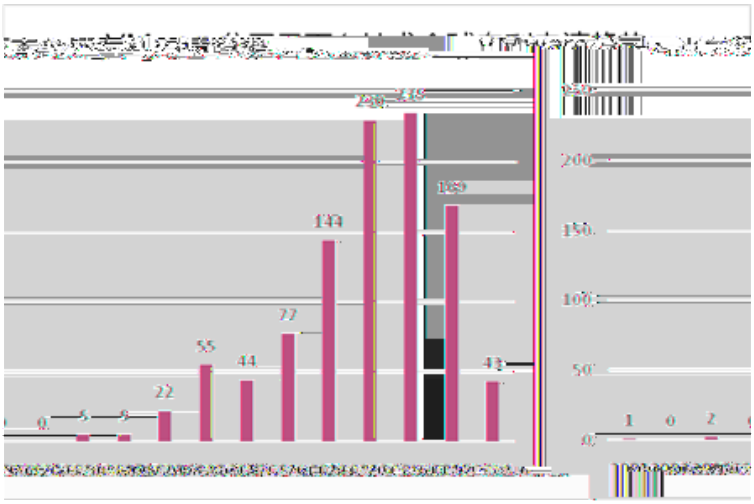
VMware 1032

2001 VMware 2008

VMware

2014 235

VMware



2-3-13 VMware

VMware 89%

VMware

2-3-14 VMware

VMware





