POLITECNICO DI TORINO

Technology Transfer System

SW commercialization & Technology Transfer: the case of Politecnico di Torino

Shiva Loccisano

November 2019

POLITECNICO DI TORINO

Since perspective counts…

Our history in few steps

1859 — Technical School for Engineers

1862 — Italian Industry Museum

1958 — Corso Duca degli Abruzzi: Campus opening

2009 — 150 years of “Polytechnic culture”

1859-2009
150 anni di Cultura Politecnica

1861 — Unification of Italy

1906 — Regio Politecnico di Torino

1991 — Cittadella Politecnica Campus: site construction opening

Today

Some figures

2500 RESEARCH PERSONNEL
- 980 Professors & Senior Researchers

900 STAFF (TECH & ADMIN)

700 R&TT AGREEMENT/YEAR

>1000 INTERNATIONAL AGREEMENT
- 470 Erasmus +
- 130 double degree and students mobility agreements

35K STUDENTS
- 68% OUTSIDE REGION
- 18% FOREIGNERS
- 30% Women

771 PHD CANDIDATES
- 85% scholarship
- 25% esterally funded
- PhD salary 30% higher than national average

50 DEGREE PROGRAMS
- 20 fully in English

11 Departments

INDUSTRIAL ENGINEERING

DENERG
Energy

DIMEAS
Mechanical and Aerospace Engineering

DISAT
Applied Science and Technology

INFORMATION TECHNOLOGIES

DAUIN
Control and Computer Engineering

DET
Electronics and Telecommunications

INDUSTRIAL ENGINEERING AND MANAGEMENT AND MATHEMATICS FOR ENG.

DIGEP
Management and Production Engineering

DISMA
Mathematical Sciences

CIVIL AND ENVIRONMENTAL ENG., ARCHITECTURE AND DESIGN

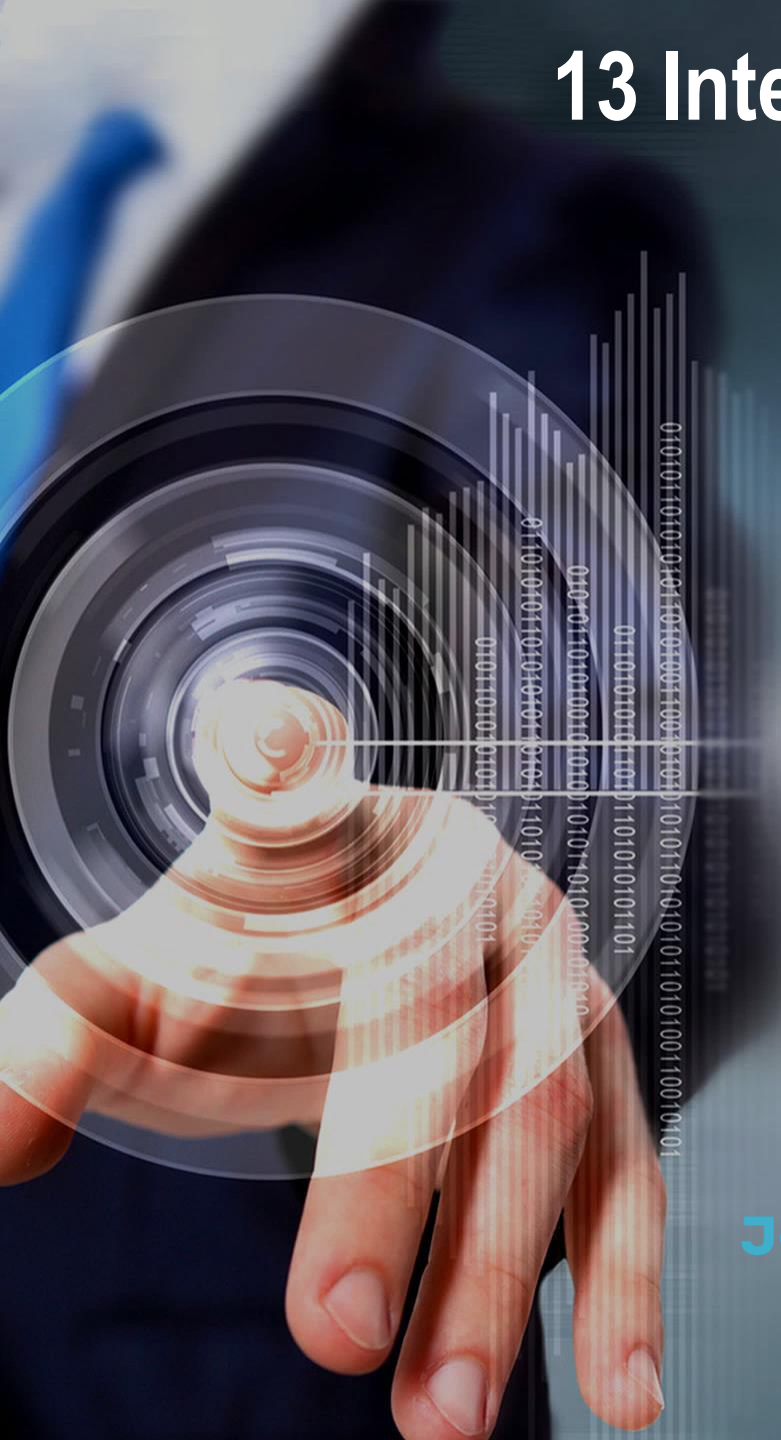
DAD
Architecture and Design

DIATI
Environment, Land and Infrastructure Engineering

DISEG
Structural, Geotechnical and Building Engineering

DIST
Regional and Urban Studies and Planning

13 Interdepartmental Thematic Centers



CARS@PoliTO
Center for Automotive Research and Sustainable mobility

CWC
CleanWater Center@PoliTO

Ec-L
Energy Center Lab

FULL
The Future Urban Legacy Lab

IAM@PoliTO
Integrated Additive Manufacturing

J-Tech@PoliTO
Advanced Joining Technology

PEIC
Power Electronics Innovation Center

PhotoNext

PIC4SeR | PoliTO Interdepartmental Centre for Service Robotics

PoliTo^{BIO}Med Lab
Biomedical Engineering Lab

R3C
Responsible Risk Resilience Centre

SISCON
Safety of Infrastructures and Constructions

SmartData@PoliTO
Big Data and Data Science Laboratory

POLITECNICO DI TORINO

Research funds

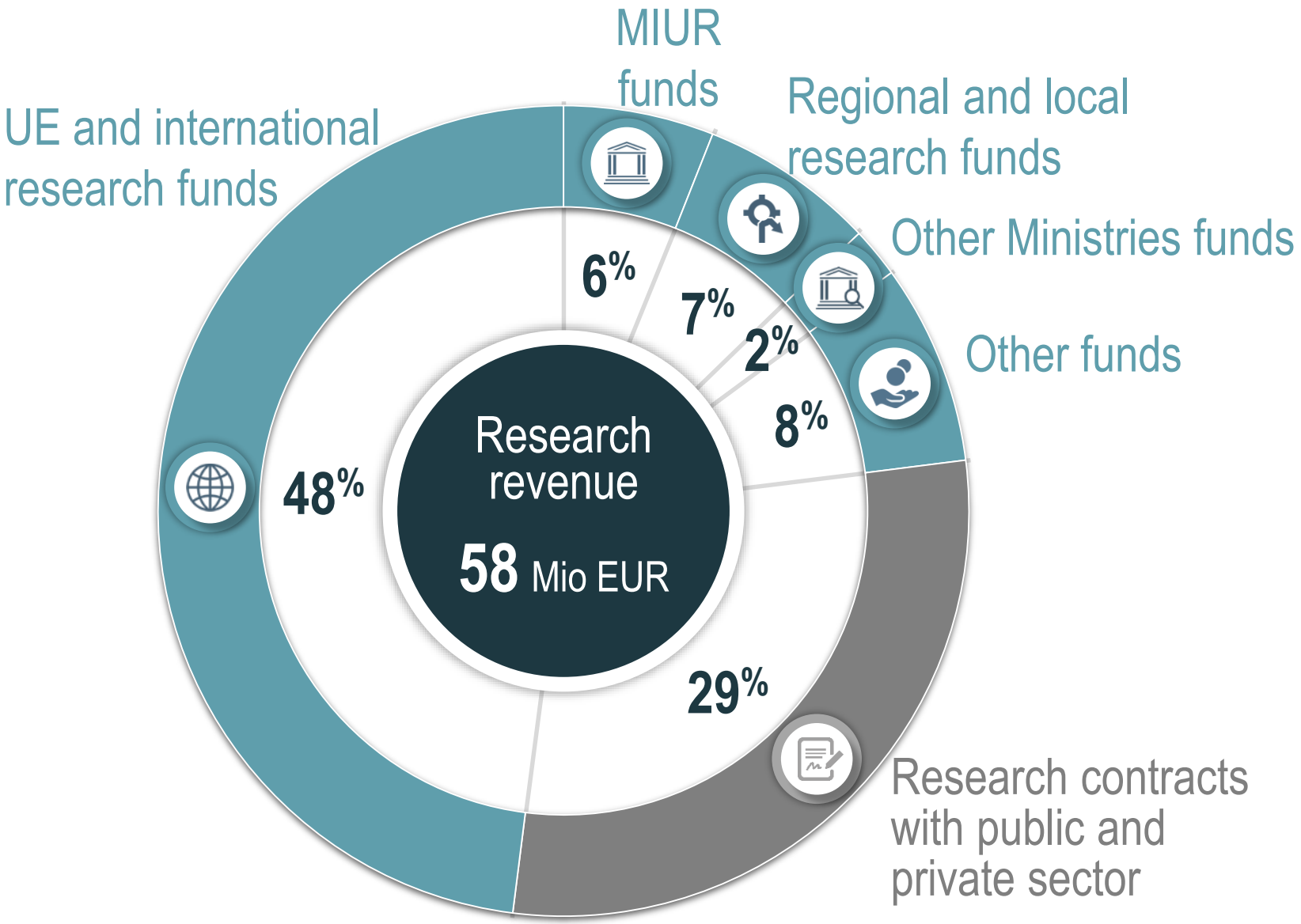
source Conto economico – Bilancio

58,2 Mio EUR
research revenue

23% of **POLITO Total revenue**
(**253** Mio EUR)

41 Mio **EUR**
From competitive calls

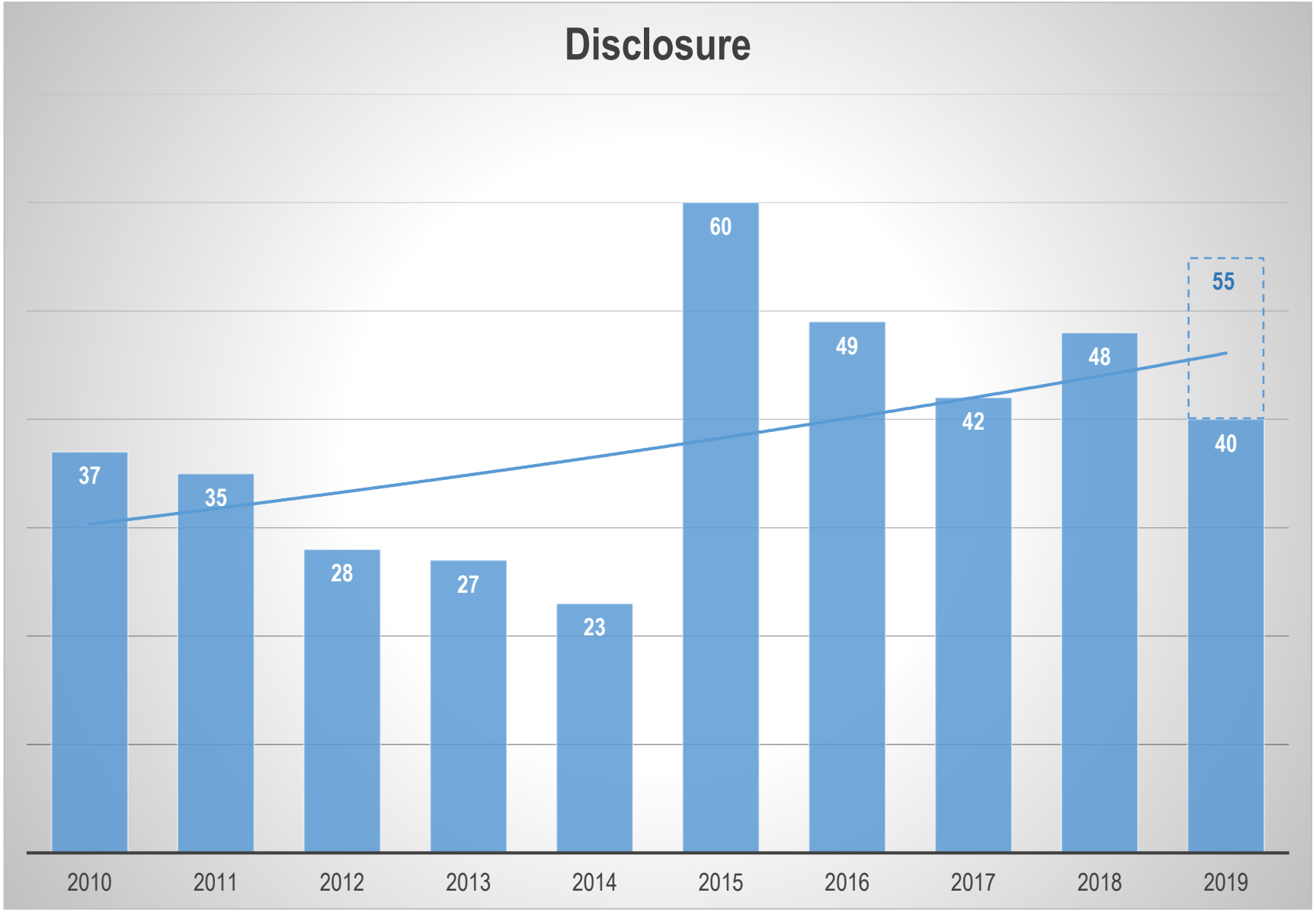
17,2 Mio **EUR**
From research contracts with public and private sector



TT FACTS & FIGURES

POLITECNICO DI TORINO
Technology Transfer System

Invention disclosures by year

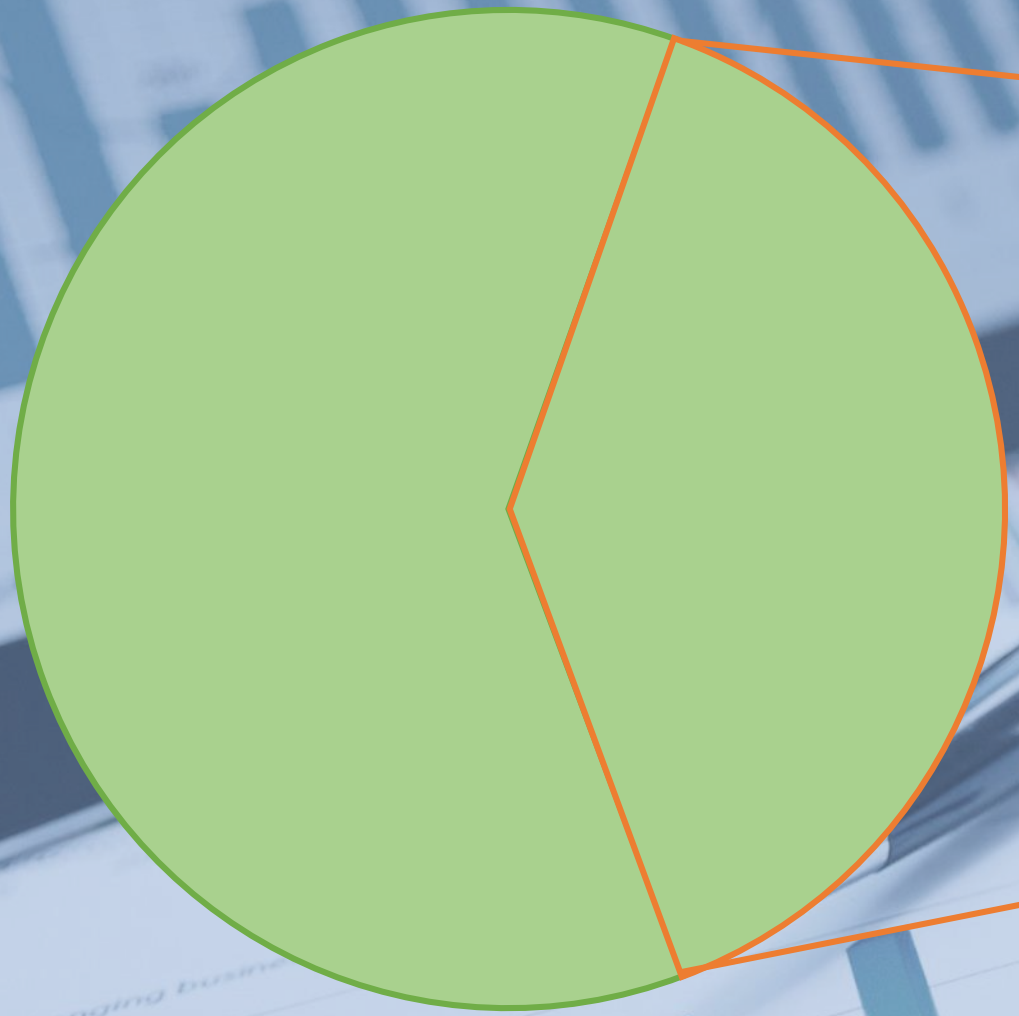


Registered patents

~800

Active patents

~300



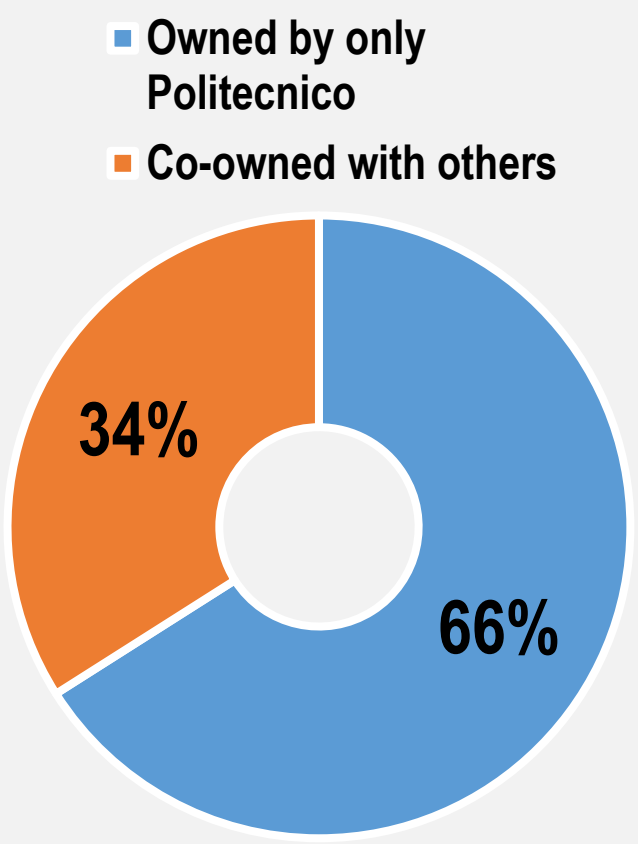
38%

195
Active patent
families

(Politecnico database)

POLITECNICO DI TORINO Technology Transfer System

Patents in co-ownership (Companies)

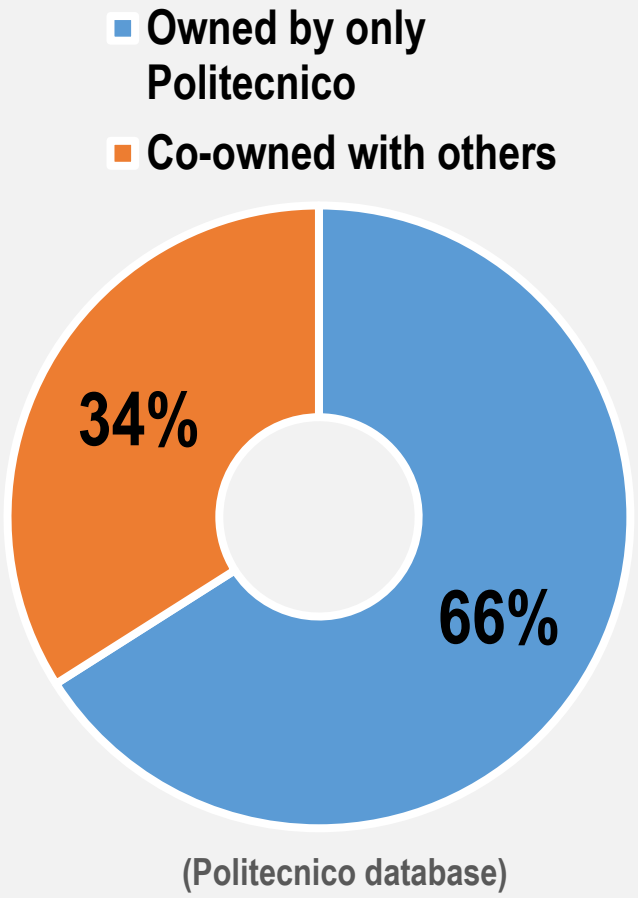


(Politecnico database)

More than 1/3 of the Politecnico's patent portfolio is represented by co-owned patents

MAGNETI MARELLI
FCA FIAT CHRYSLER AUTOMOBILES
PIRELLI
eni
LAMBORGHINI
SINCE 1925 RABOTTI TORINO - ITALY
Avio Aero A GE Aviation Business
INIZIATIVE FERROVIARIE ITALIANE
ThalesAlenia Space a Thales / Leonardo company
FERRERO
DOCERAM MEDICAL CERAMICS
SKF
TIM
LAVAZZA
Cuki cofresco
COMPREDICT
WAVE FOR ENERGY
WE PROTECT IDEAS SISVEL
CERRATO
HEXAGON METROLOGY
ISTITUTO ORTOPEDICO RIZZOLI
pininfarina EXTRA
LITHOPS BATTERIES
POLITECNICO DI TORINO Technology Transfer System

Patents in co-ownership (Universities)



(Politecnico database)

More than 1/3 of the Politecnico's patent portfolio is represented by co-owned patents

TECHNISCHE UNIVERSITÄT DARMSTADT

ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE

POLITECNICO MILANO 1863

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

UNIVERSITÀ DEGLI STUDI DI TORINO

UNIVERSITA' CAMPUS BIO-MEDICO DI ROMA

Lyon 1

UNIVERSITÀ DEGLI STUDI DI PADOVA

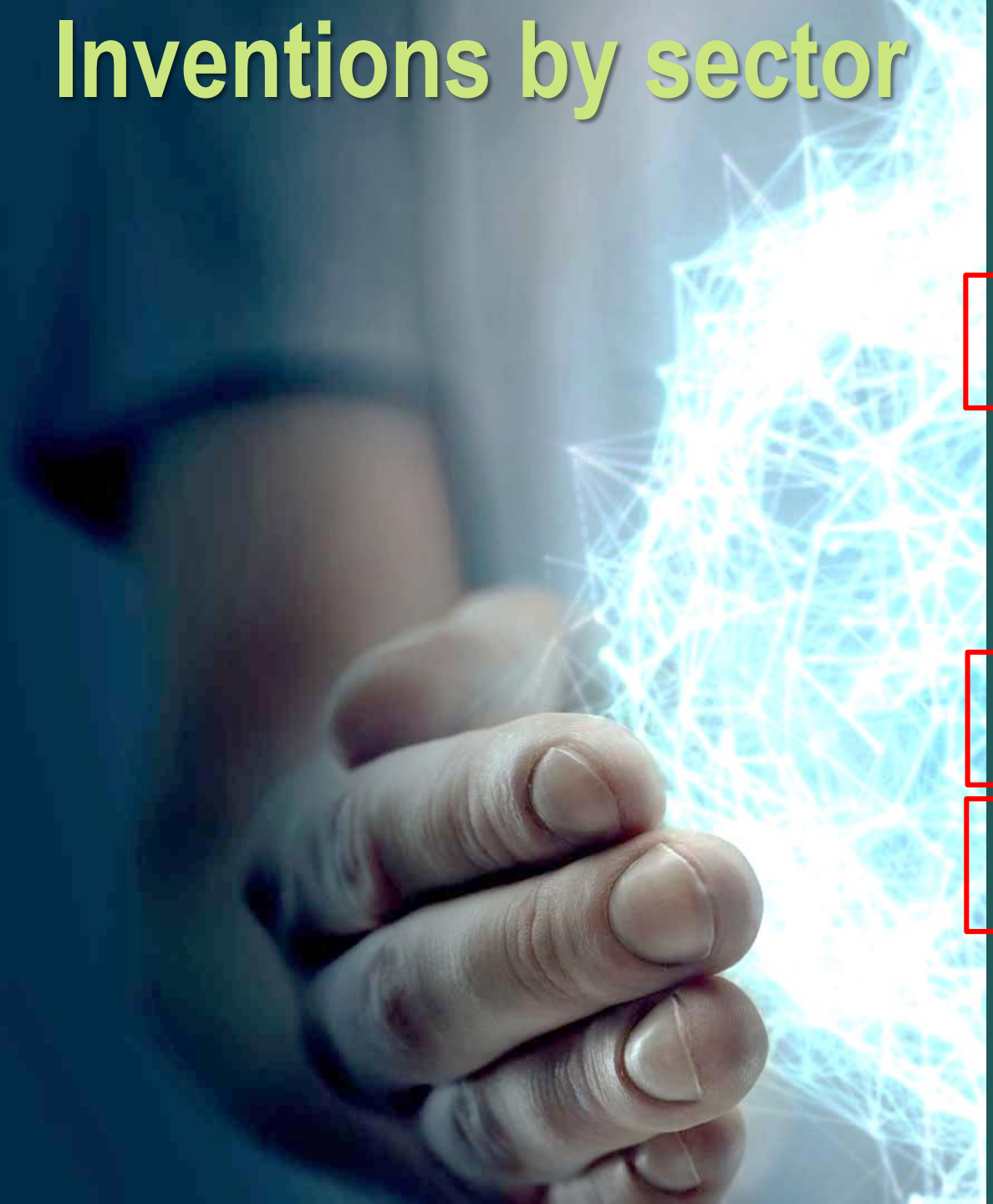
SCUOLA SUPERIORE SANT'ANNA PISA

Massachusetts Institute of Technology

جامعة قطر QATAR UNIVERSITY

POLITECNICO DI TORINO Technology Transfer System

Inventions by sector



- 9% Aeronautical, Aerospace and Automotive Engineering
- 2% Architecture and Design
- 16% Biomedical, Chemical and Pharmaceutical Engineering
- 8% Civil, Environmental and Building Engineering
- 6% Energy and renewable sources
- 21% ICT and Electronics
- 17% Industrial, Mechanical and Mechatronics Engineering
- 1% Mathematical Sciences
- 20% Physical Eng., Materials and Nanotechnologies

0 5 10 15

POLITECNICO DI TORINO Technology Transfer System

SW can be patented as CII

EPO's definition

Index for Computer-Implemented Inventions

A computer-implemented invention (CII) is one which involves the use of a computer, computer network or other programmable apparatus, where one or more features are realised wholly or partly by means of a computer program.

The following collection of hyperlinks is provided in order to facilitate access to the sections of the Guidelines for Examination in the EPO which give instructions particularly useful for the search and examination of CIIs.

It is noted that this collection is not a separate publication about CIIs. Instead, following a hyperlink will lead to the section of the most recent and applicable version of the Guidelines which has the stated number and title.

Patentable inventions

G-I, 1 Patentability requirements
G-I, 2 Further requirements of an invention
G-II, 1 General remarks
G-II, 2 Examination practice
G-II, 3.6 Programs for computers (*updated in GL 2018*)
- G-II, 3.6.1 Examples of further technical effects (*introduced in GL 2018*)
- G-II, 3.6.2 Information modelling, activity of programming and programming languages (*introduced in GL 2018*)
- G-II, 3.6.3 Data retrieval, formats and structures (*introduced in GL 2018*)

Novelty and inventive step

G-VII, 5.4 Claims comprising technical and non-technical features (*updated in GL 2015*)
- G-VII, 5.4.1 Formulation of the objective technical problem (*updated in GL 2015*)
- G-VII, 5.4.2 Examples of applying the steps listed in G-VII, 5.4 (*introduced in GL 2016, with its sub-sections*)
  - G-VII, 5.4.2.1 Example 1
  - G-VII, 5.4.2.2 Example 2
  - G-VII, 5.4.2.3 Example 3
  - G-VII, 5.4.2.4 Example 4

Features related to the list of Art. 52(2) and technical contribution

G-II, 3.3 Mathematical methods (*updated in GL 2018*)
G-II, 3.4 Aesthetic creations
G-II, 3.5 Schemes, rules and methods for performing mental acts, playing games or doing business (*updated in GL 2018*)
- G-II, 3.5.1 Schemes, rules and methods for performing mental acts (*introduced in GL 2018*)
- G-II, 3.5.2 Schemes, rules and methods for playing games (*introduced in GL 2018*)
- G-II, 3.5.3 Schemes, rules and methods for doing business (*introduced in GL 2018*)

G-II, 3.6 Programs for computers (*updated in GL 2018*)
- G-II, 3.6.1 Examples of further technical effects (*introduced in GL 2018*)
- G-II, 3.6.2 Information modelling, activity of programming and programming languages (*introduced in GL 2018*)
- G-II, 3.6.3 Data retrieval, formats and structures (*introduced in GL 2018*)

G-II, 3.7 Presentations of information (*updated in GL 2018*)
- G-II, 3.7.1 User interfaces (*updated in GL 2017*)

Search practice

B-VIII, 2.2 Subject-matter excluded from patentability under Art. 52(2) and (3) (*introduced in GL 2015*)
B-VIII, 2.2.1 Computer-implemented business methods (*updated in GL 2015*)

Requirements of Art. 84

F-IV, 3.9 Claims directed to computer-implemented inventions (*introduced in GL 2016, with its sub-sections*)
- F-IV, 3.9.1 Cases where all method steps can be fully implemented by generic data processing means
- F-IV, 3.9.2 Cases where method steps require specific data processing means and/or require additional technical devices as essential features

F-IV, 4.13 Interpretation of expressions such as "Apparatus for ...", "Method for ..." (see par. 3)

Requirements of Art. 83

F-III, 1 Sufficiency of disclosure (see par. 4)

Formal requirements for the description part

F-II, 4.12 Computer programs

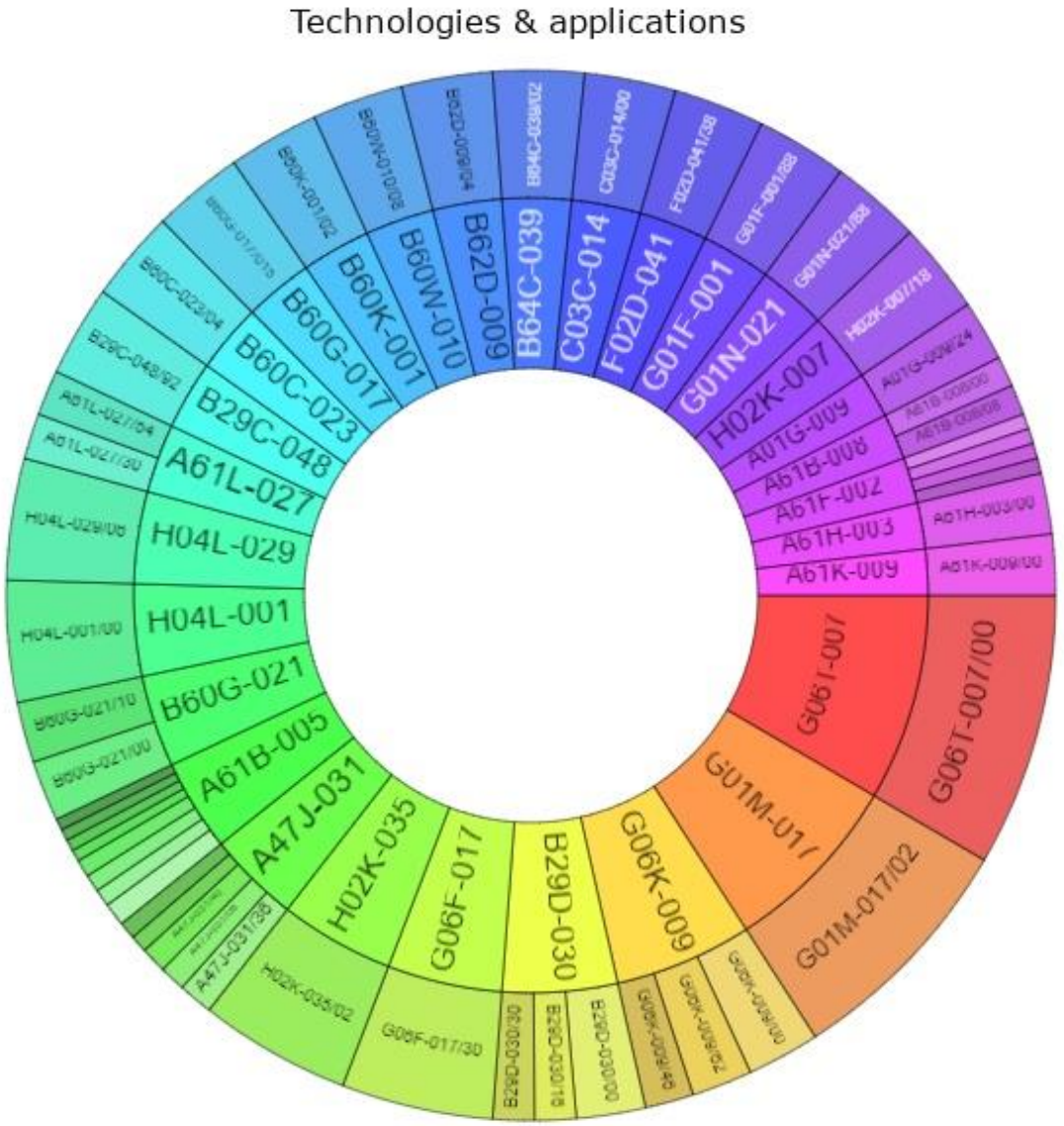
Polito's public portfolio (orbit.com)

350 total patent families

164 patent families classified

54 «CII related fields»

CII
33% of portfolio



© Questel 2019

Polito's patent portfolio – CPC classified

Technologies & applications

© Questel 2019

CII identification

Technologies & applications

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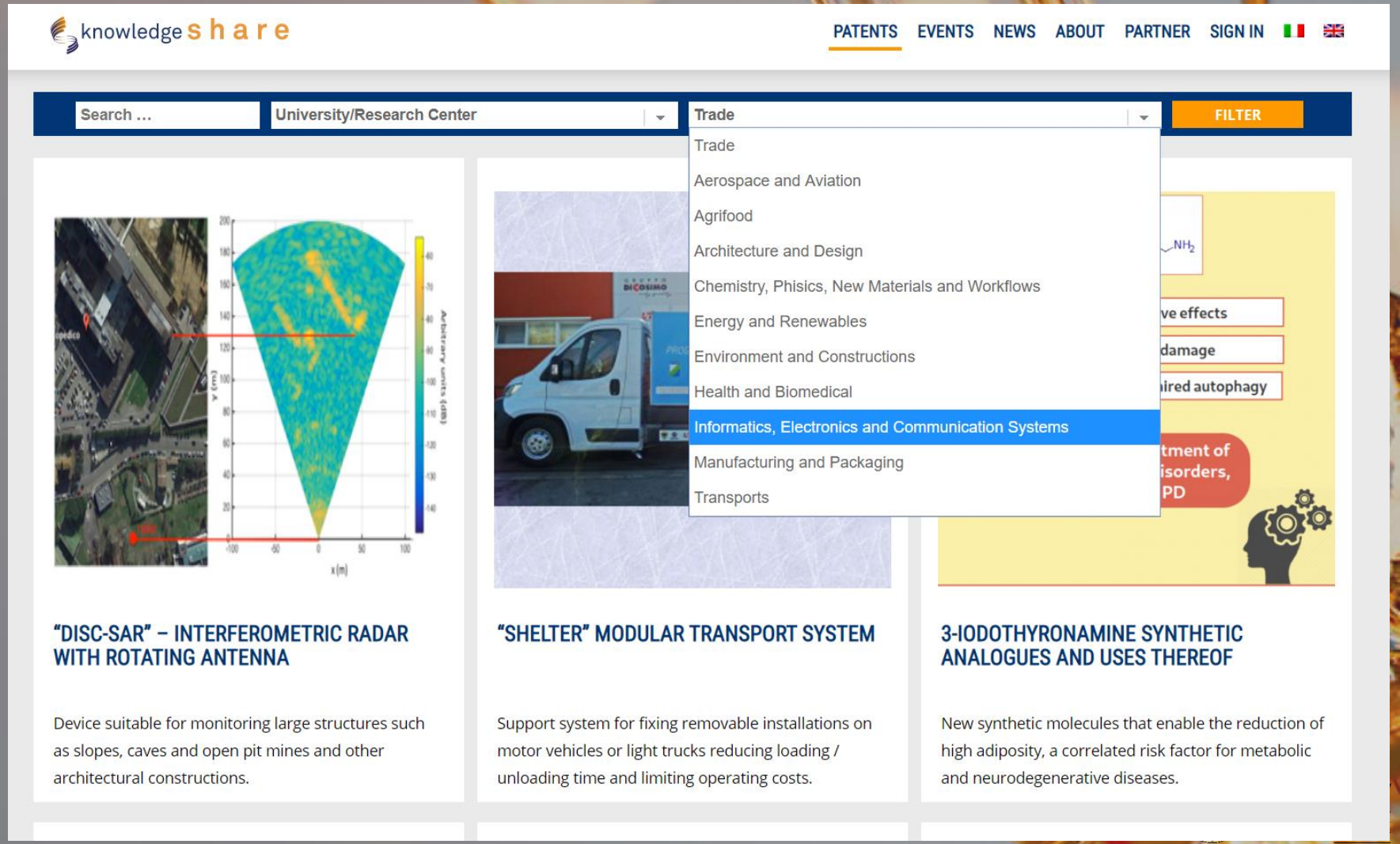
WE SHARE KNOWLEDGE

knowledge share

CONDIVIDIAMO CONOSCENZA

Su Knowledgeshare
le imprese trovano il punto d'incontro
con la conoscenza
cresciuta nelle aule universitarie
e sviluppata nei laboratori di ricerca.

- ✓ A SHOWCASE FOR ACADEMIC TECHNOLOGIES
- ✓ 1.000+ patented technologies
- ✓ 60+ Italian Universities and Research Centers



POLITECNICO DI TORINO · Netval · UIBM

A case study: Ermes Cyber Security

METHOD FOR UNSUPERVISED DETECTION OF WEB TRACKERS

PRIORITY NUMBER:

102015000079272

KEYWORDS:

User's privacy
Network traffic analysis
Computer security
Corporate data protection
Internet

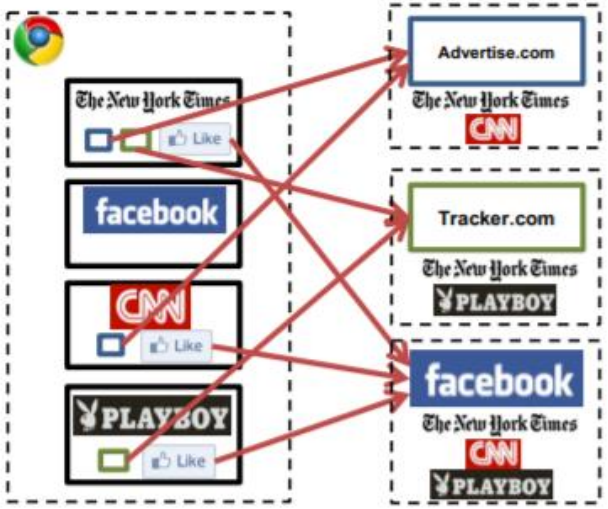
POLITECNICO DI TORINO

ISP customers and corporate employees unwillingly expose sensitive information to tracking services. This methodology allows to automatically detect web services performing user tracking activity. By analyzing HTTP/S network traces generated by real users or bots, this unsupervised algorithm classifies tracking services to build blacklists to block them.

knowledge share

www.knowledge-share.eu

METHOD FOR UNSUPERVISED DETECTION OF WEB TRACKERS



DESCRIPTION:

Web tracking services, embedded in websites and portals, base their business on the collection of information about users browsing the Web. When a user visits website, her browser is induced to contact the embedded tracking services, which keep track of the visit and collect a variety of information (e.g., IP address, type of device, etc.). The user is monitored and tracked continuously during her browsing activity. Even corporates are potential targets of tracking services. In fact, they can rebuild corporate employees' activity and, collect information which tech corporate would likely protect.By inspecting traffic traces. The algorithm analyzes the key-value pairs contained in requests and identifies the keys whose values show a one-to-one mapping with the user. Keys exhibiting such behavior are labeled as tracking, as the services using them. With the output of the algorithm, we can build blacklists to install in browser plugins or firewalls, and prevent users and employees to contact trackers, thus preserving their privacy.

www.acme.com		$User_1$	$User_2$	…	$User_n$
Visit-1	key1 ✗	y_1	y_2	…	y_n
	key2 ✗	z	z	…	z
	key3 ✓	v_1	v_2	…	v_n
Visit-2	key1 ✗	y_1'	y_2'	…	y_n'
	key2 ✗	z	z	…	z
	key3 ✓	v_1	v_2	…	v_n
Visit-3	key1 ✗	y_1''	y_2''	…	y_n''
	key2 ✗	z	z	…	z
	key3 ✓	v_1	v_2	…	v_n

ADVANTAGES:

- Completely unsupervised;
- Personalized filter lists, built using specific user/corporate traffic log;
- No pre-built models or rules;
- Compatible with all platforms.

APPLICATIONS:

- Corporate data protection;
- Unsupervised filter creation to block malicious sites.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 June 2017 (08.06.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/093924 A1

(51) International Patent Classification:
G06Q 30/02 (2012.01)

(21) International Application Number:
PCT/IB2016/057246

(22) International Filing Date:
1 December 2016 (01.12.2016)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
102015000079272 2 December 2015 (02.12.2015) IT

(71) Applicant: **POLITECNICO DI TORINO** [IT/IT]; Corso Duca degli Abruzzi, 24, 10129 Torino (to) (IT).

(72) Inventors: **METWALLEY, Hassan**; Via Delle Certaie, 8, 10060 Airasca (TO) (IT). **TRAVERSO, Stefano**; Via Falletti, 41, 12045 Fossano (CN) (IT). **MELLIA, Marco**; Lungo Po Antonelli, 59/13, 10153 Torino (to) (IT).

(74) Agents: **CAMOLESE, Marco** et al.; c/o METROCONSULT SRL, VIA SESTRIERE 100, 10060 None (to) (IT).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD FOR DETECTING WEB TRACKING SERVICES

(57) Abstract: Method for detecting web tracking services during browsing activity performed by clients having associated client identifiers, the method comprising the steps of extracting key- value pairs contained into navigation data, looking for one-to-one correspondence between said client identifiers and the values contained in said keys and selecting the keys for which at least a client-value one-to-one correspondence for at least a predetermined number of clients is observed, said keys identifying the associated services as services performing tracking activities.

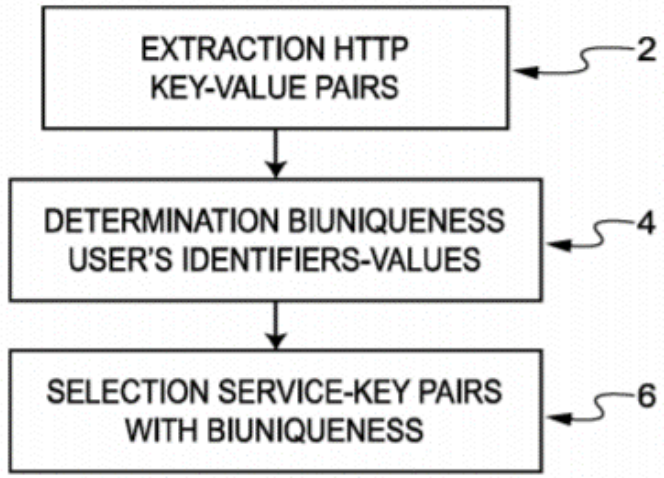


Fig. 1

WO 2017/093924 A1

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ERMES CYBER SECURITY

Spin off del Politecnico di Torino

Incubatore Imprese Innovative Politecnico Torino

- Funded in the year 2017
- Ermes Cyber Security makes use of AI to protect all the companies' connected devices and especially the internet browsers from known and new emergent cyber attacks
- AI allows continuous and self-updated protection

https://vimeo.com/255888739/de2e7bad11

ERMES clients portfolio

REALE MUTUA
REALE GROUP

enel

Carrefour

UNIONE INDUSTRIALE TORINO

LAVAZZA
TORINO, ITALIA, 1895

CVA

ERMES

INNOVATION Lifestyle
La startup che cura le ulcere con l'intelligenza artificiale: dal Wound Viewer a BioUpper
La metropolitana di Torino fornirà anche energia per riscaldare le case
Un brevetto registrato dal Politecnico sfrutta la geotermia
Innovation for Change project starts at CERN
Student work placements
Summer student programme
Teacher programmes
Updates
Scientists
CERN community
Ricerca, al PoliTo Techshare Day i giovani "Archimede" incontrano le aziende
Più di 100 imprese, circa 300 colloqui al Politecnico di Torino
Quotidiano
Data 02-02-2017
Pagina 12
Foglio 1
LA STAMPA TECNOLOGIA
SEZIONI
Su Google i Vip rispondono con i video-selfie
Facebook, Instagram e il 2017 sui social network
Qualcomm presenta Snapdragon 845, il cervello dei prossimi ...
Polaroid One Step 2, il ritorno del mito
Su iTunes e App Store nel 2017 vincono Tiziano Ferro e WhatsApp
Cerca...
SEGUICI SU
ACCEDI
LA STAMPA
EDIZIONE DI "INNOVATION FOR CHANGE"
Torino, la sfida dei giovani talenti
vice presidente della Fondazione Agnelli, da Marco Gilli, rettore del Politecnico di Torino, Fa- direttrice del
investitori. «La forza iniziativa – sottolinea – sta proprio nell'in narità». E in quella pulsiva che si chia «Ci sono centinai aiutano a organiz na o a trovare u Quello che man stiamo cercando re grazie anche porto di Ideasq specializzato sperimentale Cern, è la cap al mondo dei e a quanto po re se si unis energie e l avanzate di sporre a par
300 mila euro per Ermes, startup di informatica di Torino
La società, all'interno dell'incubatore I3P, ha
pronta a misurarsi sul mercato della
Home
Cronaca
Torino, anche il Politecnico nella "Top 5" della European
LA SFIDA TRA I 300 MIGLIORI STUDENTI DEL MONDO
Torino conquista il podio della "
Uno dei premi è andato a "Toothpic" sistema di autenticazione messo a punto da ricercatori del
Il Politecnico come ponte tra il metodo della Silicon Valley e lo sviluppo imprenditoriale del territorio
Torna con la seconda edizione l'appuntamento che, tramite la EIA, European Innovation Academy, vuole dare a 600 aspiranti innovatori l'occasione di
nelle aziende di domani
ROBOT "PIGRO" AL DRONE REALIZZATO CON
Poli mette in mostra l
È "PIGRO", un esoschele-
FRATELLI IMPR
NAVIGA
HOME
RICERCA
IMPRESA & T
INDUSTRIA
SERVIZI
CONSUMI
LAVORO
EXPORT
MONDO & MERCATI
Banda Ultra larga, Open Fiber fa il pieno nelle gare...
Aceto balsamico di Modena nel caos: si sfascia il Cda del...
nasce a T
la piogg
per «misura
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