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POLITICS, POLICY AND PEOPLE MAGAZINE



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EU ROBOTICS WEEK  
GAME-CHANGING  
TECHNOLOGY

## INTERNET OF THINGS

TALKING TO  
DG CONNECT'S  
ROBERTO VIOLA

## ANTIMICROBIAL RESISTANCE

IS THERE LIGHT AT THE  
END OF THE TUNNEL?



# JONATHAN HILL

EU FINANCIAL  
SERVICES  
COMMISSIONER  
EXPLAINS HIS CAPITAL  
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## PRESERVING THE EFFICACY OF ANTIBIOTICS IS CRUCIAL



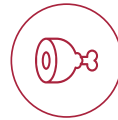
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Migration Summit: EU must provide right short-term response while addressing underlying causes of the refugee crisis



David Cameron speech: Chances of Brexit remain high



Bucharest nightclub tragedy can teach us valuable lessons



EU leaders must act to protect journalists threatened with violence



Port services: A practical example of what's wrong with EU membership

Cover photo by Natalie Hill

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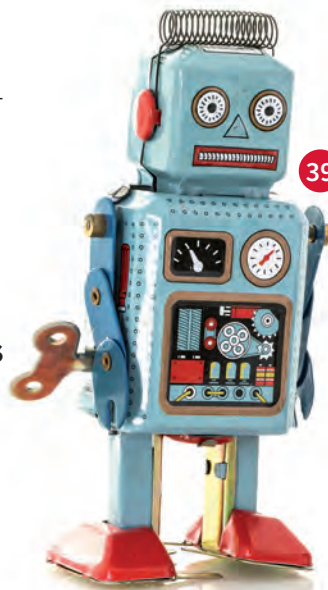
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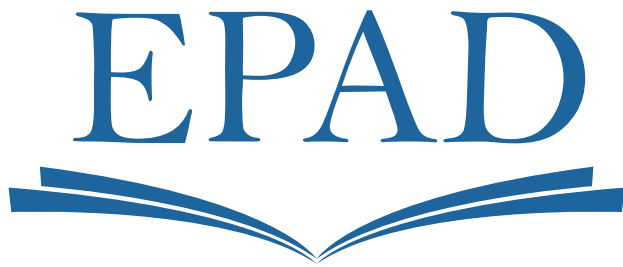
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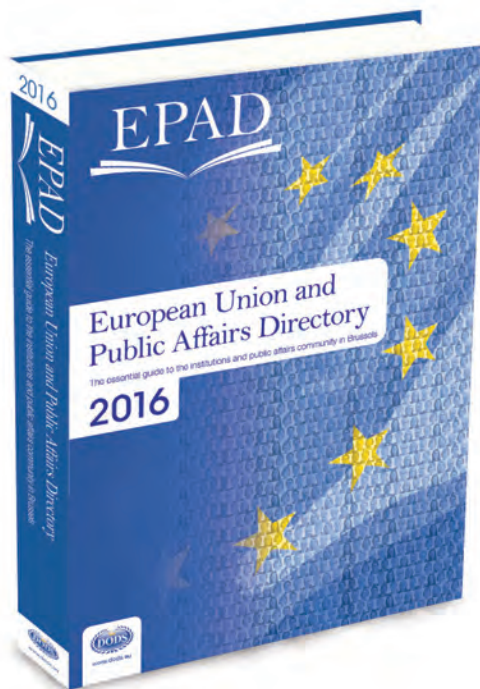


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# CAPTAIN SENSIBLE



“**Plucky but bonkers** versus dull but sensible”. Reviewing some of the overinflated media hoohah following David Cameron’s long-awaited unveiling of his EU reform shopping list last week, this little beauty from Guardian writer Dan Hodges made me sit up and take notice, as well as chuckle.

Despite the somewhat automated “highly problematic” opening response from the European Commission, the reality is that there’s probably little in Cameron’s proposals that will truly end up worrying European leaders, once the “iron law of bureaucracy” kicks into action. Yes there may well be some carefully engineered spats with the ‘continentals’ brewing and it’s guaranteed that we’ll witness an exasperated President or two bemoaning ‘Les rosbifs’ for their obduracy, but let’s face it, Juncker, Tusk, Merkel and company must be saying to themselves “Is that it?”

On migration, always likely to be the thorniest issue, UK foreign Secretary Philip Hammond capitulated within hours of Cameron’s speech, telling the BBC that, “If the Commission comes back to us with alternative ways of reducing the flow of [low-skilled migrants] into the UK, we’d certainly listen to any proposals they have to make.” So it’s plain then that Cameron doesn’t really care what kind of a deal he gets. An opt-out here, a protocol attached to a preamble there, it doesn’t really matter, because the upcoming referendum fight isn’t really about winning promises from Brussels, it’s about Cameron throwing his weight about a bit, claiming he’s won exactly what he set out to do and then asking the public to choose between himself or Nigel Farage.

Dan Hodges suggests the Brexit phoney war will soon end and the referendum battle for British voters won’t be about whether the UK should stay in or leave the EU, but between two personality groups. In the red corner, the dull but sensible, “you know we’re right” ‘in’ camp and in the blue the plucky but daft as a brush ‘out’ faction. Those Brits are a basically sensible lot and the establishment-bred Cameron is surely in this case their Captain Sensible. ★

## Brian Johnson

Managing editor



### THE MOST READ FROM\_ THEPARLIAMENTMAGAZINE.EU

EU Commission TTIP proposal attacked by MEPs  
<http://bit.ly/1MM7Lbx>

EU Parliament warns Cameron not to weaken EU core principles  
<http://bit.ly/1L8dDkA>

Rushed financial regulations harming investors  
<http://bit.ly/1QxbJ3X>

## NEWS ANALYSIS



## LEGISLATION WATCH

### EU PARLIAMENT EXPECTED TO PASS LANDMARK ANTI-TERROR LEGISLATION

In the next Strasbourg plenary, MEPs will vote on a report by the Parliament's civil liberties, justice and home affairs committee aimed at preventing the radicalisation and recruitment of EU citizens by terrorist organisations.

The issue of radicalisation has never been more relevant. An estimated 5000 EU citizens have joined terrorist organisations in Iraq and Syria, with returning jihadis responsible for the Charlie Hebdo massacre in Paris earlier this year, which killed 12 and injured 11.

Rachida Dati, Parliament's rapporteur on the file, said it aimed to establish "a truly European response," that would "not mean fewer competences for member states but more coordination and collaboration."



The report recommends finding a common definition of "foreign fighter" to permit criminal proceedings against them; stepping up the exchange of information among member states and tackling internet radicalisation and recruitment.

The report was passed with a significant majority at committee stage and is expected to pass with the similar ease in plenary later this month. ★



## RAPP SHEET

### CAN DARIO TAMBURRANO HELP RESTORE PUBLIC TRUST IN ENVIRONMENTAL TESTING?

Dario Tamburrano is leading the EU Parliament's reform of energy efficiency labelling, a topic that has hit the headlines in various forms over the past few months.

The VW emissions scandal followed by British tech giant Dyson's legal challenge over EU energy labelling regulation have placed 'testing' processes under levels of scrutiny they have been unable to cope with. The ensuing scandals have eroded public trust in businesses and legislators alike.

Tamburrano recognises this and is committed to restoring consumers' faith in the products they buy. He said, "Trust is everything in a system of information aimed at helping consumers in their choices."

As consumers become more environmentally aware, energy labelling will play a central role in influencing

customer choice. Noting this, he continued, "Trust is even more important when a choice entails products that consume energy and an individual needs to have unconditioned faith on the correctness of the information provided with a label."

Referring to the report, he "cannot assure anybody we will be able to be as ambitious as we would like to be," though says "trust and testing will play an important role."★

#### Energy labelling report

**Biog:** Dario Tamburrano is an Italian member of the Europe of Freedom and Direct Democracy Group.

**Committee:** Industry, research and energy (ITRE)

**Purpose of report:** to update and make more effective the existing acquis on energy labelling.



## OUT AND ABOUT

### THE ROUNDTABLES, CONFERENCES AND LAUNCH EVENTS THAT WILL BE KEEPING THE BRUSSELS BUBBLE BUSY THIS WEEK

This week on Monday (16th) the British Chamber of Commerce in Belgium will hold a briefing on the upcoming Dutch EU Council Presidency priorities on environmental issues. Also on Monday, MEPs *Jytte Guteland* (S&D, SE) and *Cristian-Silviu Buşoi* (EPP, RO) will host the third awareness week on alcohol-related harm. Commissioner for Health and Food Safety Vytenis Andriukaitis is set to deliver the keynote speech.



EU energy giant Vattenfall is holding an event on Tuesday (17th) entitled 100 per cent Renewables – Truth or dare? *Jos Delbeke*, Director-General of DG CLIMA and MEP *Jytte Guteland* are set to participate.

Parliament's intergroup on climate change, biodiversity and sustainable development host a conference Tuesday on building a blue society, while Parliament's Greens /EFA group have organised a public conference on "Why soil matters? A European perspective". Also on Tuesday MEP *Karin Kadenbach* (S&D, AT) is set to participate at the 3rd European Health Literacy Conference

Other MEPs busy on Tuesday are *Claudiu Ciprian Tănăsescu* (S&D, RO) and *Cláudia Monteiro de Aguiar* (EPP, PT) who are co-hosting a roundtable event entitled "Healthy lungs for life: Take the active option, organised by the European Respiratory Society and the European Lung Foundation

Meanwhile MEP *Renate Sommer* (pictured) (EPP, DE) will moderate a conference on "Anti-microbial

resistance: Prevention and not just treatment", organised by Health First Europe.

The Parliament Magazine team will be out and about at Tuesday's Enterprise 2020 CSR summit on the future of Europe and at a Huawei hosted event where 45 European students from 13 countries will be briefing MEPs on their participation in the IT giant's flagship seeds of the future CSR programme.

Wednesday (18th) will see Parliament's science and technology options assessment (STOA) deliver a workshop on the impact of organic food on human health. On the same day MEP *Alojz Peterle* (EPP, SL) hosts an event to launch the SIOPE and MEPs against Cancer backed European Cancer plan for children and adolescents.

Inclusion Europe will hold a policy seminar on Thursday (19th) on the rights of persons with disabilities, hosted by MEP *Richard Howitt* (pictured) (S&D, UK). Parliament's S&D group will hold a conference on Thursday entitled Europe in crisis: a call for a new dialogue.



Thursday will also see the EESC and CoR joint conference on the issue of civil society, cities and regions preparing for COP21 and beyond. Commission Vice-President for energy union Maroš Šefčovič is set to participate at the Eurelectric-organised conference on achieving the energy union. EDEFOP meanwhile will hold a joint seminar with Eurofund and the EESC on the theme of work organisation and workplace learning.★



## NEWS STORIES

### UK PRIME MINISTER REVEALS RENEGOTIATION WISH LIST

David Cameron, UK Prime Minister, has outlined the reforms he will seek in renegotiation talks ahead of the UK's referendum on its EU membership. Cameron's demands included: protecting non-Euro countries from discrimination; increasing competitiveness; opting out of an 'ever close union' and restricting migrant access to benefits.



### EU COMMISSION TTIP REFORMS ATTACKED BY MEPS AND CAMPAIGNERS

The EU Commission has formally presented its proposals for a reformed approach on investment protection and a new and more transparent system for resolving disputes between investors and states – the investment court system. The investment court system will replace the controversial ISDS mechanism. Critics have slammed the announcement, arguing that the new system "retains most of the major problems with ISDS."

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### EU SLAMS TURKEY'S HUMAN RIGHTS RECORD

The EU Commission has released a progress report accusing the Turkish government of 'major shortcomings' when it comes to protecting human rights and fundamental freedoms. The report was aimed at assessing Turkey's candidacy for accession to the EU. Commissioner Johannes Hahn said that Turkey was 'more or less' ready to begin membership negotiations.





## TWEETFEED

**NEVEN MIMICA**

@MimicaEU

"It is only by working together that we can truly make migration work for development & development work for migration" #Valetsummit speech

**ALDE GROUP**

@ALDEgroup

As long as EU leaders continue to focus on measures to return migrants & outsourcing our problems, progress will be minimal @GuyVerhofstadt

**EUROPEAN COMMISSION  
VERIFIED ACCOUNT**

@EU\_Commission

EU finalises proposal for #investment protection & Court System for #TTIP

**NIGEL FARAGE**

@Nigel\_Farage

Clear from @David\_Cameron's pathetic renegotiation that only way to control immigration is to Leave EU. Remain = open door mass migration.

**REBECCA HARMS**

@RebHarms

If member states can't agree on common strategy in #refugeecrisis then goodbye Schengen



## IN MY DAY - LEGISLATIVE PROCEDURES

**PARLIAMENT'S INCREASING POWERS HAVE HELPED CLOSE THE EU'S DEMOCRATIC DEFICIT, WRITES RICHARD CORBETT**

Until 1979, the European Parliament was composed of delegations from national parliaments. It had only the right to be consulted on a small range of proposals before adoption by the Council of Ministers. This meant that ministers could adopt new laws without recourse to an elected assembly – a severe 'democratic deficit' in the legislative process.

From these humble beginnings, Parliament's stature has increased through a series of treaty revisions. In 1970 and 1975 it gained the power to adopt the EU budget, and to amend it (within ceilings). In 1987 it also gained the power to approve or reject a range of international agreements. MEPs also acquired the power not just to supervise but to appoint the European



Commission, now including the election of the Commission president.

Within ten years of directly electing full-time MEPs, Parliament's role as co-legislator also began to expand. First there was the cooperation procedure, granting MEPs the right to amend proposals in some areas (subject to override by Council). Codecision, which removed the override for limited fields in 1993,

gradually morphed into the 'ordinary legislative procedure', now applicable to almost all fields where rules are made at European level.

Over four decades, the European Parliament has evolved from a largely consultative assembly into one half of a genuine bicameral system, with an equal role to that of Council in nearly all fields of European law making. ★

**Richard Corbett** has been an MEP since 1996



## PM+: CHINA MARKET ECONOMY STATUS

**DELAYING CHINA MES VITAL FOR EU COMPETITIVENESS, ARGUE MILAN NITZSCHKE AND LAURENT RUESSMANN**

We believe that China should not yet be granted MES. Not only does the country fail to fulfil the technical requirements of a 'market economy', the lowering of EU trade defences in the face of aggressive dumping would also severely damage the competitiveness of EU manufacturing industries, putting between 1.7 and 3.5 million EU jobs at risk.

Despite the evidence of the damage it would do, there have been

voices arguing that the EU is legally obliged to grant MES to China in 2016 on the basis of its WTO accession protocol. But that's not a conclusion shared by other international trade experts.

The EU cannot make a decision of such importance based on the threat of Chinese retaliation. Our recommendation for EU legislators is simple. Postpone granting MES to China until it fulfils the criteria for a market economy. Instead of taking hasty unilateral action, align with other major trading partners and take a coordinated approach. ★





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# Member states' inaction on victims' rights 'deplorable'

Civil liberties committee MEPs urge EU countries to put legislation into practice

**A**round 30 million crimes are reported to the police in the EU each year. With so much effort focussed on capturing and convicting the perpetrator, the victim can sometimes be forgotten. As increasing numbers of people travel, live and work abroad, there are many more potential victims of crimes committed in a country other than their own.

**“The Commission should apply its full powers and take rapid action against those member states still lagging behind”**

Birgit Seppel

This year will be vital in making victims' rights a reality in all EU countries as the EU victims' directive, adopted in 2012 must finally be implemented into EU member states' national law by 16 November 2015. The directive aims at establishing minimum standards on the rights, support and protection of victims of crime, and ensures that persons who have fallen victim of crime are recognised.

The issue of victims' rights is something Laura Ferrara, an EFDD MEP and a member of Parliament's committee on civil liberties, justice and home affairs (LIBE), believes must be “a priority within the EU.” However, she thinks “much remains to be done to support victims of crime,” in terms of “informing them of their rights and ensuring effective referral systems

and training for police officers and legal practitioners to establish a relationship of trust and confidence with victims.” She called on member states to “properly implement, without delay, the EU victims' directive.”

The need for the EU to do more was also raised by EPP group deputy Roberta Metsola, who said, “The EU and its member states needs to do more to ensure that victims of crime across the continent are protected from further trauma and victimisation.” She also highlighted the need for member states to put the rights guaranteed in the EU victims' directive into practice, saying, “while many member states have passed new legislation in this regard, we are still too far away from translating these rights into action.”

Birgit Seppel, of Parliament's S&D group and a member of the LIBE committee, said the adoption of the 2012 directive was “a matter of urgency” and supported the creation of

**“The EU and its member states needs to do more to ensure that victims of crime across the continent are protected from further trauma and victimisation”** Roberta Metsola

“common rules for victims of crime,” and increasing judicial cooperation “based on a climate of mutual trust.” She noted, however, that “there are still member states which seemingly have not fully implemented the directive,” calling the lack of action “deplorable, particularly for victims concerned.” She concluded by calling for the Commission to “apply its full powers and take rapid action against those member states still lagging behind.”

Janice Atkinson, of Parliament's far-right ENF grouping, adopted a different position, arguing that victim support is not an EU competency. She told Parliament Magazine that, “as you would expect I do not support any intervention from the EU. The UK has its own support systems, and while they could be improved, EU intervention is not the answer.” ★





## IMPLEMENTING THE EU DIRECTIVE ON VICTIMS' RIGHTS

**A** little under three years ago, the European Union adopted EU Directive 2012/29 on the rights, support and protection of victims of crime. The Directive has been lauded as a step change for victims. The European Parliament was integral to its success with cross party support and input from a host of MEPs. It's fair to say that without the EP's involvement, the Directive would not have been so strong or ambitious.

The importance of this legislation should not be underestimated nor can it be overstated – it has the potential to transform how victims are treated across the EU, to ensure minimum rights are available to all. It is not bureaucratic gold plating, but has the potential to be transformative law-making.

And this is where the problem lies. The potential for success does not necessarily translate into success – rights are not necessarily becoming reality.

By 16 November 2015, all Member States (except Denmark) should have implemented the Directive. Many governments have recognised this and have taken great strides already. Their efforts must be acknowledged and applauded.

Yet much remains to be done and there are countries which are far behind.

Of course, it could be said that this is the normal state of affairs and that the Commission will carry out its usual monitoring. But we should not accept this. The commitment expressed by MEPs signing Tomáš Zdechovský's Declaration is an important start. Together we must follow this by focusing the spotlight on governments, asking what action they have taken and demanding action where none has been taken. We must also act to develop knowledge on the problems that exist and on the best solutions to adopt.

The issue is too important to remain silent. In 2015, nearly 100 million people in the European Union will fall victim to crime. This was the case in previous years and will most likely be the case in the years to come.

The impact of those crimes in many cases may be relatively minor but for millions, the crimes they suffer are devastating and the consequences can be life changing.

Crime can severely affect a person's emotional and physical health and ability to work, resulting in personal problems, periods of sickness absence, unemployment and even premature retirement and death. The impacts affect our societies and our economies. Estimates for the total cost of crime across the EU run into the hundreds of billions of Euros.

Sadly, on top of this, victims face the additional burdens and challenges of national systems that are difficult to navigate and often not designed with their needs in mind. They face inappropriate or poorly worded questions from justice practitioners. They may be treated with a lack of respect or understanding and may not receive essential information on their rights. If they come forward, they risk further victimisation and may end up being confronted by their attacker in court. Despite these difficulties they may struggle to receive the protection they need and the emotional and practical support to start the process of recovery.

Effective solutions to deliver support, provide information, train practitioners and much more exist and are being put in place by some States. There is no excuse today to forget victims which is why it is so important for us all to speak out wherever their rights are ignored.

# A barbaric and outdated practice

MEPs have voted to end EU subsidies to bullfighting, and now they want to put an end to the controversial sport, reports **Julie Levy-Abegnoli**

**C**onsidered by some a staple of Spanish culture, bullfighting is perhaps one of Europe's most controversial spectacles, strongly condemned by animal welfare activists. Last month, MEPs voted to stop subsidies to farmers who specifically breed bulls for bullfights, who had, up until now, been receiving EU funds.

The amendment was tabled by Parliament's Greens/EFA group, whose members were, unsurprisingly, pleased with its adoption. Treasurer Bas Eickhout notes that, "the European convention for the protection of animals kept for farming is clear - animals should not suffer pain, injury, fear or distress. It's also clear that farmers who breed and raise bulls for bullfighting do not comply with these conditions. Therefore, these farmers should not be eligible for agricultural subsidies."

His colleague Keith Taylor adds that, "bullfighting is a barbaric and outdated practice, that continues to lose support, including from those living in the countries where it takes place such as Spain, Portugal and France. It may be a long-standing

tradition, but in this day and age and with everything we know about animals and their ability to suffer, this so-called 'sport' should be brought to an end immediately."

"Animals are sentient beings - something that the EU recognises through the Lisbon treaty. Therefore, it is unacceptable that tens of thousands of bulls are maimed, tortured and killed in these needless fights. Bullfighting should not be supported by public money, be that funds from national and local government, or European payments. Not only do these payments prop up a controversial activity and fly in the face of EU commitments on animal welfare, but millions of euros are diverted from deserving programmes. That's why I fully welcome Parliament's call to stop EU money being used to prop up the bullfighting industry."

The amendment enjoyed cross-party support, with ECR deputy Rikke Karlsson saying, "does the EU not have better things to do with public money than finance cruelty? Raising bulls for bullfighting should not be subsidised by European taxpayers. Any spectacle during which animals are purposefully maimed and killed is disgraceful. In fact, it's wrong to talk about ancient traditions - until the end of the 19th century, there were no killings in bullfighting." ★

TELL US WHAT YOU THINK @PARLIMAG



**"The European convention for the protection of animals kept for farming is clear - animals should not suffer pain, injury, fear or distress" Bas Eickhout**





Last month, the European Parliament voted overwhelmingly to end the subsidies that are currently used to prop up the barbaric industry of **bullfighting**. This is a massive victory for animals and showed the world that the end of bullfighting is in sight. We thank those MEPs who took a stand against animal torture by supporting the amendment.

During a typical bullfight, a bull is speared, stabbed and weakened, until finally, a matador attempts to sever the exhausted animal's spine with a dagger. Sometimes, the bull drowns in his own blood before the dagger comes into play – other times, he's still alive as his broken, bleeding body is dragged out of the arena.

The industry has been on its way out for a long time, as bullrings have closed, ticket sales have slumped and towns and cities across Spain have banned the practice. The 2013 report "Toros & Taxes", compiled by Spanish MEPs, stated that without the backing of the



£100 million subsidies, bullfighting would be on the brink of a financial collapse.

Although the amendment has been passed, it must now be voted on by EU finance ministers to become law, and it's vital that this vote occur without delay. When it does, those representatives will have a chance to make a lasting difference in the lives of the thousands of animals who are tortured in the name of so-called "entertainment" every year. The power is in their hands to vote for progress, and, most importantly, for compassion.

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# EU electoral reform to bring ‘true European democracy’

In reforming electoral rules, MEPs hope to bring a more European dimension to European Parliament elections, reports **Julie Levy-Abegnoli**

**T**he current European Parliament electoral rules date back to 1976 – a time when the EU had just nine member states and the Berlin wall was still erect; things that, today, seem very far away. This is why MEPs last week voted on a report on reforming the electoral act. Co-rapporteur Danuta Hübner says, “the elections to the European Parliament are still governed by national rules and dominated by national issues. This has to change. European elections need to gain a stronger European dimension.”

The Polish deputy explains that, “Parliament has insisted that all

citizens can vote wherever they live or work. It has also proposed granting Europeans the possibility to cast their votes electronically, online and by post.”

Co-rapporteur Jo Leinen also stresses the need for electoral reform. “We have a European Parliament that is elected by 28 national elections, and election campaigns remain focused on national topics and personalities.” He adds that, “to strengthen the European dimension in the election campaigns, we need to make European political parties more visible. The respective European party should appear alongside the national party on the ballot paper, so that the voter can make an informed choice.”

Leinen also tells this magazine that, “we want a real gender balance. The draft law contains a provision that electoral lists shall ensure gender equality. In our view, it is unac-

ceptable that only 37 per cent of MEPs are women.” Also, “we encourage the member states to harmonise the voting age at 16, enabling young people to actively engage in European politics.”

For ALDE group shadow rapporteur Sylvie Goulard, the key element of this text is, “the proposal for the creation of a Europe-wide joint constituency, alongside the lists in the member states. It is by moving away from a system which remains very national, where the French vote for the French and the Brits represent the Brits, that a true European democracy will be created.” Unfortunately, as growing Euroscepticism spreads across the Union, this may not go down so well in the member states.

Meanwhile, Greens/EFA group shadow rapporteur Josep-Maria Terricabras, is far from pleased with the

contents of the report. In his view, “the final result is a weak reform.” He takes issue with the proposed obligatory threshold of between three and five per cent, which he says, “goes against the spirit of diversity and protection of minorities.” Terricabras also laments that, “transnational lists have just been mentioned in passing, almost by chance” and that, “the introduction of gender

equality – which is theoretically accepted by all – has been postponed until the 2024 European elections.” In his view, “the new electoral law will serve the official machinery, but will not help enough to destroy mistrust and distance between the electors and the elected.” ★

**“The elections to the European Parliament are still governed by national rules and dominated by national issues. This has to change”**

Danuta Hübner

# The chances of a Brexit remain high

**Denis MacShane** wonders if the Prime Minister's renegotiation demands will result in a triumph that can be celebrated both at home and on the continent



**Denis MacShane** is a former UK Europe Minister and author of *How Britain Will Leave Europe* published by IB Tauris

**C**ameron has not yet agreed to the proposition of a Brexit, but he did say he “rules nothing out” – a fairly crude threat to his fellow 27 heads of government as well as the three European Presidents – Juncker, Tusk and Schulz – that if he does not get what he wants he could lead the Brexit campaign.

Few believe he really wants to enter history books as the Prime Minister who took Britain out of Europe and a close reading of his speech shows that he is asking for very little.

Gone are earlier demands for an end to

Social Europe or an opt-out from the working time directive. Gone are the demands for ‘full-on treaty change’, to use Cameron’s curious adjective of earlier this year. Gone are the demands that Britain should control its frontiers and limit entrance to European immigrants. Gone is the demand that the House of Commons should be able to reject EU legislation it does not like.

Instead there was a long disquisition on the noxious nature of five harmless words – ‘ever closer union of peoples’ (not states) – that appear in the treaty preamble. This has now become totemic for Cameron. The phrase which has no legal effect has not been a cause of concern between 1957 until a year or two ago. It will be easy to draft a declaration that in any future treaty, the UK can have a protocol

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added to the treaty saying ECU does not apply.

Equally however, it will be open to any future government not to insist on the protocol being applied. The Prime Minister stressed that there is no possibility of a second referendum – as suggested by Tory Eurosceptic-in-chief Boris Johnson and supported by some Leave campaigners – and that a Brexit decision is irreversible. This is constitutional nonsense. In the event of Brexit

Cameron will resign as Prime Minister and in any event he cannot dictate to his successor or any future Parliament what its policy will be.

In the end, there is nothing in Cameron’s speech that cannot

be managed or massaged into forms of words that he can claim as a negotiating triumph. Brussels is good at this kind of verbal legerdemain.

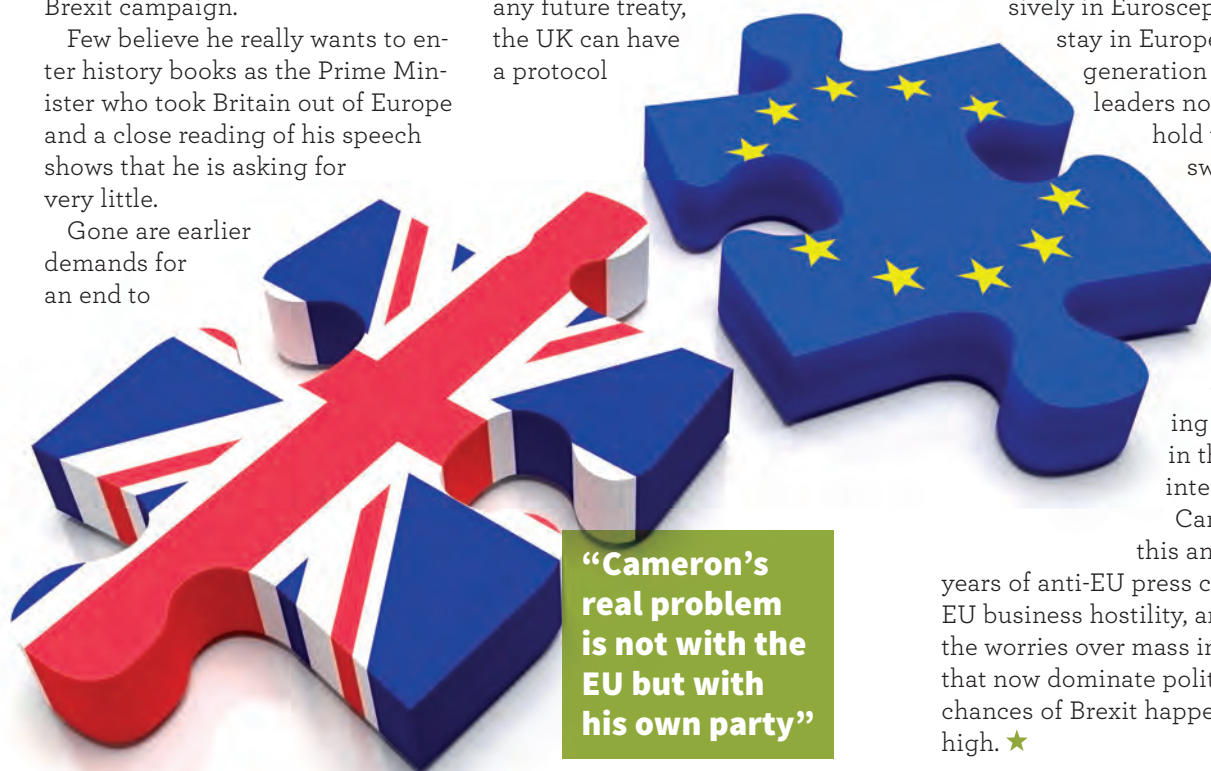
His real problem is not with the EU but with his own party. Since 1997 when the Tories decided to make anti-Europeanism the leitmotif of opposition politics, the British Conservatives have invested mas-

sively in Euroscepticism. To stay in Europe, Cameron’s generation of Tory

leaders now have to hold their noses, swallow their anti-Europeanism, and decide that Tony Blair was right and the UK being in the EU is in the national interest.

Can they do this and reverse 20

years of anti-EU press coverage, anti-EU business hostility, and deal with the worries over mass immigration that now dominate politics? The chances of Brexit happening remain high. ★



“Cameron’s real problem is not with the EU but with his own party”

Roberto Viola talks to **Julie Levy-Abegnoli** about the challenges that lie ahead in the implementation of the Commission's digital single market strategy and why we shouldn't fear the Internet of Things

**R**oberto Viola, the freshly appointed head of the European Commission's DG for communication networks, content and technology (DG Connect), will have a crucial role to play in the implementation of the Commission's digital single market (DSM) strategy, something that the Italian official tells this magazine is his "top priority." He continued, "without a complete, secure and trustworthy DSM, new digital services for consumers and businesses along with services underpinning them - the Internet of Things, big data and cloud computing - may come later, or to a lesser extent in Europe. This is something we must avoid."

A key area the DG Connect chief will be looking into is the Internet of Things (IoT), which he explains is, "despite its exciting potential, still too complex, too fragmented, too expensive to connect and too hard to scale." "That is why", says Viola, "we have created a focus area on IoT under the 2016-17 work programme of Horizon 2020, which promotes cross-sectoral platforms, accelerates market uptake and achieves economies of scale. We aim to focus on different sectors,

**"Europe has been slow in embracing the internet revolution because too many players have focused attention on protecting the past rather than looking positively at the future"**

taking IoT out of its niche and supporting the 'de-siloing' of application development."



# Internet of Things

## New rules should reassure users without hindering business

The Commission is currently working on, "a single market for IoT so that devices and services can connect seamlessly, anywhere in the EU, and scale up without being hindered by national borders; open, agile plat-

forms that can be deployed across different sectors and are open to third party developers; a thriving IoT ecosystem with vibrant developers'

communities across Europe; spearheading some advanced markets for experimentation and fast take up -

connected cars, smart homes, smart agri-food, wearables, smart cities and smart manufacturing."

Unfortunately, explains Viola, "Europe has been slow in embracing the internet revolution because too many players have focused attention on protecting the past rather than looking positively at the future. The first and most important step for me is to build on Europe's industrial strength and the opportunities offered by a DSM. The IoT represents the next major economic and societal disruption the internet brings, with huge socio-economic impact on business and society."

The trick, says the Italian, is to,



“have the right level of regulation: enough to provide sufficient comfort to users that there is a framework in place, but not too much to avoid excessive burdening of business initiatives. It is not an easy exercise, and this is why we need to test and experiment. But, most importantly, we need to avoid divergent legislative solutions in member states.”

Viola and his team are committed to working with all relevant stakeholders; he explains that, “we need the right research impulse through our dedicated focus area on IoT under Horizon 2020. We are launching IoT large scale pilots starting in 2016 with a budget of €100m. These large projects will lead not only to technology validation, but also to business

models and standards validation. Moreover, through the Alliance on Internet of Things Innovation, we hold a close dialogue with industry.”

Yet as exciting as IoT sounds, it also entails huge amounts of data collection, raising privacy concerns. Viola highlights that, “there are plenty of benefits deriving from IoT, but companies must comply with key privacy principles, such as the need to justify processing of personal data and privacy by design, and they must also respect the rights of the data subjects.”

And in order to encourage people to embrace IoT, “our aim is to develop a proper framework for IoT: for in-

stance, a trusted IoT label that would guarantee users a clear level of safety, security and privacy. This is one of the objectives of our IoT focus area – a set of calls within Horizon 2020 that are dedicated to the IoT – that has just been published. My firm belief

**“My firm belief is that without putting users at the heart of the IoT, people will remain afraid of the technology”**

is that without putting users at the heart of the IoT, people will remain afraid of the technology. We need to develop the right interfaces, also for people who are not tech-savvy and who should not be left behind.”

While many of the world’s internet companies and online service providers are American – Facebook, Google, Uber, for example – Viola insists that, “we shouldn’t underestimate the EU’s strength in the field. Many leading businesses, start-ups and SMEs are European, offering great products and services, meeting real consumer demands and expectations. European businesses and research institutions are world leaders in biotechnology, nanoelectronics and phototonics, among other areas. Many of our researchers and research centres are among the world’s very best.

“But there is certainly room for improvement in getting our research results in the market. That is what we are focusing on. The DSM strategy is our main instrument in achieving this goal. With the right regulatory environment, our businesses will be trading seamlessly across borders, so they grow and develop over time.”

He anticipates a “constructive and fruitful collaboration with Parliament”, whose role he says is “fundamental – its own-initiative reports on the DSM will provide very important guidance.”★



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# The key to Europe's digital future

As Europe moves towards an internet-based economy, EU policymakers are increasingly focusing on the need to develop a single market without digital borders.

Over the last twenty years technology has irrevocably changed the way we live our lives; affecting the way we shop, communicate and do business. As Europe moves towards an internet-based economy, regulation must keep pace. The EU's digital single market strategy, building on the concept of a common market, aims to eliminate barriers to online trade and improve access to online information and content while safeguarding privacy and personal data. Telecoms will play a key role in completing the digital single market, something the European Parliament's report "towards a digital single market" notes.

Kaja Kallas, ALDE MEP and Parliament's co-rapporteur on the file believes "telecommunications networks are a big part of a functioning digital single market, as infrastructure is the backbone of the digital future." She

highlights the need for a functioning single market that "will create more opportunities for start-ups, businesses and citizens," although she notes that "the fact we are paying roaming surcharges and some member states don't have net neutrality go against the idea of a single market."

Andrejs Mamikins, from the S&D group, believes that "everyone deserves qualitative and affordable access to the mobile network." He cites the abolition of roaming costs as "the first step on the way to this," as "citizens

**"one cannot emphasise enough the need for access to the internet"**

**Miapetra Kumpula-Natri**

would be more willing to use mobile services if there were lower costs."

He continues, "the logic is very simple - higher qualitative service availability would lead to a higher intensity of mutual member-state integration through closer ties between our citizens and companies." However, he notes that abolishing intra-EU roaming could "lead to much higher prices for calls to other world regions," although he says that the issue can be resolved to "the benefit of the end-consumers and, consequently, the European economy as a whole."

The S&D shadow rapporteur for the digital single market report, Miapetra Kumpula-Natri, highlights the importance of improving internet access, saying "one cannot emphasise enough the need for all Europeans from all regions having access to the internet." She thinks improving the quality of and increasing access to the internet are the most important factors in bridging "the digital divide" which "limits the possibility of more effective e-governance."

Pilar del Castillo Vera, Parliament's rapporteur on the last telecoms package report, said Parliament's adoption of the regulation on a telecom single market was "an important, and necessary step towards the development of a single market without digital

borders." On the scheduled abolition of roaming charges she said the EU has eliminated an "overdue tax and has torn down a barrier for thousands of businesses and start-ups that try to seize all the opportunities the single market has to offer." ★





# money talks

Commissioner **Jonathan Hill** explains to Rajnish Singh why his plans for the capital market union and financial regulation can help Europe recover from the current economic crisis

**T**he famous US industrialist Henry Ford once said, “It is well enough that people of the nation do not understand our banking and monetary system, for if they did, I believe there would be a revolution before tomorrow morning.” Massive government bailouts, protests by the Occupy Movement in Wall Street, New York and the City of London have battered the reputation of the banking industry over recent years. To many, they are viewed as the cause of the financial crisis and most of Europe’s economic problems. Despite this, EU Commissioner for financial stability, financial services and capital markets union Jonathan Hill, still believes the banking industry can play a major role in Europe’s economic recovery by supplying

much needing funding to Europe’s entrepreneurs and SMEs. He says “We need strong financial markets alongside a strong banking system so that we can improve the funding conveyor belt for Europe’s businesses.”

Post the financial crisis, banks are still considered one of the major sources of business funding. However, the British official recognises that alternative sources of funding are now needed. “If you have a financial system that is heavily dependent on one source of funding, you will get hit if that source of funding dries up...it makes sense to have more than one string to your bow.”

Hill is scared that if start-ups cannot access financial funding in Europe, they will move to the US. This is why the Commissioner sees the capital markets union (CMU) action plan as a way of encouraging different sources of →

# ACCESS TO LEGAL AID FOR VICTIMS – EU PERSPECTIVE

Adoption of the DIRECTIVE 2012/29/EU establishing minimum standards on the rights, support and protection of victims of crime created new challenges in legal aid area. The **Faculty of Law and Administration of the Adam Mickiewicz University (AMU, Poland)** alongside with its partners: Coinfo (Italy); Providus (Latvia), CSD (Bulgaria), including experts from Portugal, Spain and United Kingdom implemented project “*Improving protection of victims’ rights: access to legal aid*” financed by EU.

The purpose was to identify common criteria for the legal aid to be applied in harmonization of EU legislation. Training courses for practitioners (prosecutors, counsels; Police officers, judges) conducted by UN trainers and workshops for NGO’s representatives also took place during the project. We achieved to develop new standards of effective and efficient legal aid for victims. Our research were presented during international conference in Poznań.

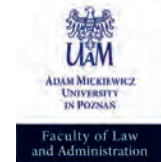
Deliverables (general report, practice facilitation handbook, training manuals) and conclusions are

available in publication (P. Wiliński, P. Karlik (eds.), *Improving protection of victims’ rights: access to legal aid*, Poznań 2014) and on the website: [www.victimrights.eu](http://www.victimrights.eu).

We encourage every entity interested in Victims’ Rights issues to contact us: [wilinski@amu.edu.pl](mailto:wilinski@amu.edu.pl).

The Faculty of Law and Administration AMU is one of the largest and best schools of law in Poland. Currently, it employs in nineteen chairs over a hundred staff members conducting research in different fields of law, administration and economy. The Faculty offers a wide range of practical courses besides the traditional, theoretical subjects. More on:

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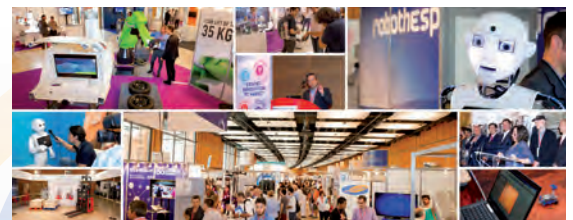


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finance, “whether it is venture capital, angel investing, crowdfunding, private placement and loan-originating funds.”

The former UK government Minister sees the CMU as a major plank of Juncker’s plan to boost infrastructure investment within Europe, by raising new forms of private financing.

One key untapped source of financing with the potential to raise billions in investment is the insurance industry. “The insurance sector has almost €10 trillion to invest in the European economy; I am keen that it can throw more of its backing behind European infrastructure.”

By contributing towards investment infrastructure, and helping European SMEs access more funding, the CMU action plan is seen as sustaining economic recovery. It will make the whole financial system stronger by “diversifying away from traditional dependence on banking. This will lay the foundations for a healthier and more sustainable European economy.”

**F**ollowing the global banking crisis and the financial catastrophe within the Eurozone, Hill is keen to underline that the EU has taken steps to avoid possible future market failures. He points out that since 2008, when the Lehman Brothers bank collapsed, the banking sector has had to strengthen their defences by increasing their capital base. “We have a greater capacity to manage banks that get into trouble through the recovery and resolution framework.” One of the key tools the EU can now use is the single supervisory mechanism (SSM) which means they can supervise banks within the Eurozone who are too big to be supported by just one member state.

The Commissioner also points to significant steps taken to strengthen the EU regulatory framework for financial services outside the banking

**“We need strong financial markets alongside a strong banking system so that we can improve the funding conveyor belt for Europe’s businesses”**



sector, in particular those covering the market in derivatives and securities, through the European market infrastructure regulation (EMIR). Meanwhile, the markets in financial instruments directive II (MiFID II) and the alternative investment fund managers directive (AIFMD) regulates the conduct of financial traders, investor protection, market abuse regulation and fund management. Hill is keen to point out that he believes that “Europe is in a much better position now to withstand a crisis than it was before.”

When asked as to how he will make sure companies are not burdened with expensive administrative costs, especially nonfinancial firms

or SMEs, Hill stresses the need to, “strike the right balance between reducing risk and enabling growth.”

However, also Hill stresses that his approach to financial regulations, “is that that they should be evidence-based and proportionate.” While he admits the EU must remain vigilant towards risk, he adds “we also need to remember that no risk equals no-growth.”

In September this year, Hill launched a public “call for evidence”, seeking feedback on the cumulative impact of EU regulations over the last few years. This looked at the benefits, unintended consequences, consistency and coherence of EU rules. He thinks that, “this is in line with the ‘better →

regulation' approach of the commission, led by Frans Timmermans, and also incidentally work going on in the financial stability board."

For Hill, the aim is to, "check whether the rules added together have resulted in unintended consequences or could have achieved their intended objectives more effectively." Responding to a number of MEPs who have been critical of some his proposals for reducing the capital requirements that insurance companies and banks should hold, he points out that these reductions have been based on the advice of the European Insurance and Occupational Pensions Authority (EIOPA).



Underlining the political importance Brussels places on the CMU, the Commissioner points that council has made rapid progress on backing his proposals on 'securitisation' for banks, aiming for an agreement by Christmas. Summing up his overall strategy towards the introduction of CMU, Hill states; "The need to build early momentum is exactly what lies behind my overall approach on

CMU; long-term ambition combined with immediate concrete measures, building up over time, step-by-step."

He also wants to free up bank-lending in the wider economy by bolstering securitisation markets in Europe (the financial practice of pooling various types of debt such as house mortgages, commercial mortgages, car loans or credit card debt obligations, and selling them to third parties as securities) in Europe. "If we can rebuild securitisation markets to pre-crisis levels that could add to an extra €100bn of investment for the whole economy."

But he is keen to point out that his new policies are "not to encourage a return to the bad old ways of the past," adding that the newly introduced safeguards will, "identify when securitisation is simple, transparent and standardised, with the need of the originators (of the debt) to retain some risk."

Hill also stresses that he is seeking advice on how to proceed on capital requirements from the European Banking Authority, the European Central Bank and the Bank of England. However, he recognises the need for MEPs to provide their input. "Of course I recognise that there will be a need for debate in the parliament and Council. But we are making good progress..."

He recognises that some of Europe's leading financial and banking centres, such as the City of London, Frankfurt and Paris, trade globally and not just within Europe. He says, "we will follow and shape international debates on regulatory standard-setting but also be sensitive to the need of the European economy."

The Commissioner does not only want to attract capital from within Europe but also from outside. "The CMU action plan is about knocking down barriers, not putting them up. By removing barriers to the single

market, CMU will make the EU more attractive to third-country investors."

Hill has plans to develop alternative

European financial markets outside the big three of London, Frankfurt and Paris by using structural reform support and technical assistance. However, Hill will also be working with the international financial regulation bodies, such as the Financial Stability Board

and the International Organisation of Securities Commissions, to support the development of global capital markets.

**"Of course I recognise that there will be a need for debate in the parliament and council. But we are making good progress"**

**R**ecently, the UK chancellor of the exchequer, George Osborne, gave a speech in Berlin that sang the praises of the CMU. Even although talks of a possible Brexit dominate British politics, Osborne pointed out the potential of CMU in providing a financial boost to Europe's businesses, particularly SMEs. He contrasted the new action plan with some of the other EU's financial regulations and rules, which he claimed had made the continent less competitive to run a financial services business.

Hill fully supports his fellow Conservative's assessment of the CMU, stating that, "The CMU should be good for consumers and businesses across the EU." On regulatory burdens, however, one year into his role Hill highlights how the commission has been ruthless in reducing regulation. "We cut the number of new laws by 80 per cent in our first year and will do so again in the next year. I am following the same approach in my area of responsibility."

Ultimately for Jonathan Hill, although a well-regulated system is needed is within Europe, he also points out that, "we have to be aware of international competition. That is another reason why, where there is global competition, it makes sense to try to agree rules governing financial markets at a global level." ★



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# Overcoming resistance

## European Antibiotic Awareness Day

Antibiotic-resistant bacteria are a growing threat. Is there light at the end of the tunnel, asks **Colin Mackay**

**S**ince their discovery almost 100 years ago, antibiotics have become a cornerstone of medicine. They are essential in treating and preventing bacterial infections. Many modern treatments, such as cancer therapy and major surgery would be virtually impossible without their help.

However, as antibiotic use has increased, more and more bacteria have become resistant to antibiotics. This phenomenon, known as antimicrobial resistance (AMR), is a normal process of evolution. However, it means there needs to be a supply line of new antibiotics to deal with resistant infections. Worryingly, there are very few new treatments in the pipeline. Indeed, the WHO describes antibiotic resistance as “a serious threat [that] is no longer a prediction for the future, it is happening right now in every region of the world and has the potential to affect anyone, of any age, in any country”.

One reason the problem has become so acute is that many people are self-medicating with antibiotics, often when it is inappropriate, for example to treat colds or the flu. In many countries, they can be bought in pharmacies without a prescription. Another contributing factor is patients failing to complete the course of their medication. All of this increases the likelihood of bacteria developing resistance. This is making the available antibiotics increasingly ineffective.

The potential consequences of run-



“Campaigns on the rational use of antibiotics make a useful contribution”

ning out of effective antibiotics are serious. Without them, major surgery such as knee and hip replacement or heart bypass surgery would become very risky. Given that Europe’s ageing population increasingly depends on such interventions, this is a major concern.

Reducing inappropriate use and slowing the spread of resistance would mean that existing therapies would remain effective for longer. To help drive awareness of this, the European centre for disease control (ECDC) launched its annual ‘European antibiotic awareness day’ (EAAD)



in 2008. Each 18 November is an opportunity to raise awareness of the threat to

public health posed by antibiotic-resistant bacteria and the importance of prudent use of antibiotics. This year will see national events and campaigns on prudent antibiotic use in over 40 countries across Europe.

To coincide with EAAD, the ECDC will be releasing its latest data on antibiotic resistance and usage in Europe. It will also provide details of an expert assessment on the spread of bacteria resistant to carbapenems in →

# **MORE SHOTS ON GOAL**

## *Towards an innovation ecosystem in the fight against antimicrobial resistance*

**By ADRIAN THOMAS, M.D.**  
Vice President Global Public Health, *Janssen*

**T**he threats antimicrobial resistance (AMR) pose to human health are real and increasingly visible, complicating rare infectious diseases, like tuberculosis, as well as routine surgeries and illnesses. The World Health Organization states, "This is the single greatest challenge in infectious disease today."<sup>1</sup>

Research commissioned by the UK government concluded that a continued rise in resistance would result in 10 million deaths per year by 2050, and

lead to sharp reductions in global GDP.<sup>2</sup> World leaders are emphasizing the importance of an urgent, global response to stem this growing tide. Many EU Member States and institutions have committed to developing national plans to combat AMR within the next two years.

At Janssen, we recognize these dangers and their potential to claim millions of lives across both advanced and less developed healthcare systems. We are committed to advancing the policies and technologies that will drive forward progress in this field.

The international community must find ways

to boost investment in the discovery and development of new technologies against AMR. Together with policymakers, innovators and their potential to claim millions of lives across both advanced and less developed healthcare systems. We are committed to advancing the policies and technologies that will drive forward progress in this field. The international community must find ways to boost investment in the discovery and development of new technologies against AMR. Together with policymakers, innovators must work collaboratively to assemble, test, and implement a robust collection of incentive models, sufficient to attract the world's best and brightest to the challenge of AMR, underpinned by stewardship.

For drug-resistant diseases, the need for more R&D is particularly pressing

– yet failure risks are higher than average and there is limited commercial return for developing antibiotics. The development shift forced by drug resistance demands a targeted approach, different from current strategies.

Scientific exploration towards market-ready technologies is a lengthy, risky, and expensive process. Extensive clinical testing is necessary, and post-market research requirements can be rigorous and costly.

Stakeholders should work to cultivate an innovation ecosystem to combat AMR, creating a basket of options to encourage innovation and the development of adjacent technologies such as companion diagnostics.

These include both "push" strategies (e.g., grants) and, especially, "pull" tactics (e.g., transferrable regulatory exclusivity, prize models, and priority review vouchers). Such diverse and integrated strategies, executed as a holistic package, will engage the range of public and private innovators, marking an important step forward to spur AMR-related R&D.

Similarly, stewardship programmes play a vital role in managing antibiotics overuse and preserving their effectiveness, and should be pursued in parallel with programmes that promote a flourishing R&D environment for AMR.

Success will require multi-sectoral collaboration, offering a potential model for market introduction of new antibiotics. Our experiences with our new multi-drug resistant tuberculosis treatment illustrate the progress that is possible, and the challenges associated with the development and rollout of new antibiotics.

AMR solutions must be multi-pronged and bold in their design. We should aim to foster more "shots on goal," mobilizing the larger innovator community to apply its time, talents, and resources to the challenge of AMR.



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# AMR:

## Helping Animals to Help Ourselves

The human and animal pharmaceutical sectors are two sides of the same coin, with both needing to learn from each other when it comes to benefiting their respective “clients”.

Clearly, animals, whether domestic, or farm-based, must enjoy the right to good health. Patients, as consumers of food, have long since come to the conclusion that a well cared for animal results in a better quality end product. An essential element in this simple chain is the requirement for animal to have access to medicines and vaccines that are specifically tailored to them.

The problem, though, as acknowledged by the European Food Safety Authority, is that the overuse or misuse of antibiotics is linked to the emergence and spread of micro-organisms resistant to them. Subsequently, therapies may prove ineffective and this poses significant future health risks.

EFPIA and its member companies have engaged comprehensively in re-starting the development of new antibiotics to combat antimicrobial resistance (AMR), something described by the European Commission as a “time-bomb”. The industry, though, is intent on going further to underscore its commitment in this area. It is therefore seeking to promote the concept of a global “charter”, in order to ensure that, going forward, new antibiotics are administered in a controlled manner, while available, and at affordable prices.

The antimicrobial resistance issue in humans is a complex conundrum, though, and this is certainly not something that the pharmaceutical industry can solve on its own. What is needed urgently is a coalition of all stakeholders intent on developing a collaborative, new approach.

In order to ensure success, this approach must be accompanied by a concerted effort to de-link revenues from selling, at least outside the richer countries in Europe and North America. Essentially, this means that pharmaceutical companies should not be offered an undue incentive to sell as much as they can. This potentially could be replaced by new mechanisms, such as an advanced purchase commitment – amounting to perhaps real or virtual stock-piling – or transferable rights, reflecting the voucher system that is prevalent in the US.

It is abundantly clear that there is also an urgent need for new antibiotics for animals. As is the case in humans, these should also enjoy controlled use. In Europe we are maintain a very firm hand on the use of antibiotics in livestock. It is possible that we may need to go further in restricting the use of antibiotics in animals, but this is an issue for the veterinary and not human pharmaceutical sector.

It is nevertheless obvious that there is a need to separate the development pathways for new antibiotics. Pharmaceutical companies and publicly-funded researchers should agree to dedicate the development of some new antibiotics for human use alone. This means preventing their use in animals, which exist in an environment in which the legislation outside Europe are far more lax.

This is an idea that is emerging in the European Parliament as it discusses with Member States a potential revision of the veterinary medicines legislation. EFPIA and its members would support a process that allows the European Medicines Agency to designate certain new antibiotics solely for human use.

Yet, given that antimicrobial resistance is a global problem, this would be only one – albeit a vital – piece of the puzzle. The pharmaceutical industry is therefore issuing an urgent appeal for a global charter that will apply to all researchers worldwide.

After all, infectious disease knows no borders and globalisation brings with it both opportunities and challenges.



Richard Bergström  
Director General



European Federation of Pharmaceutical  
Industries and Associations

Europe, currently one of the last lines of defence available in antibiotics.

The European Parliament holds similar concerns. Earlier this year, Italian EFDD MEP Piernicola Pedicini was the Parliament's rapporteur on an own initiative report entitled "Safer healthcare in Europe: improving patient safety and fighting antimicrobial resistance." It concluded that the main causes of antimicrobial resistance were "the misuse of antimicrobials, including antibiotics, and in particular their excessive use, as well as stagnation in drug development in the field of antimicrobial medicines."

The report made clear proposals for reducing the impact of AMR. These included "the need to regulate the prescription of antibiotics for treatment or prophylaxis. In addition, antibiotics should only be used where correctly indicated, at the correct dose and for the shortest duration possible as recommended by evidence-based guidelines." The report also recommended that "regulation on the sales of antibiotics so that patients can buy only the specific quantity of antibiotics as prescribed by the doctors" was urgently needed.

It also pointed to the role that patients could play. "We emphasised the importance of ensuring that patients adhere and comply with their antibiotic treatments as prescribed by medical professionals," said Pedicini. "Campaigns on the rational use of antibiotics can make a useful contribution to this awareness."

Pedicini also emphasised that many healthcare associated infections, particularly those caused by resistant bacteria, can be minimised by good management of healthcare facilities. "This is why it is important that healthcare managers are appointed on the basis of their professional experience and not on the basis of their political affiliations."

Clearly, however, these measures will only buy breathing space for the current treatment; new antibiotics are urgently

required. Fortunately, it appears that there may be light at the end of the tunnel. A number of leading pharmaceutical companies, including AstraZeneca, GSK and Merck, are currently researching new treatments.

John Rex, Chief Strategy Officer and Chief Medical Officer for AstraZeneca's infection business unit, agreed that antibiotics were vital to modern healthcare. "We depend on the ready availability of effective antibiotics. They are fundamental. Without antibiotics, you cannot effectively treat cancer, or take care of premature babies or help prevent postoperative infections."

Unfortunately, he said, a number of factors have combined to cause "a frighteningly thin pipeline of novel agents." "The nature of the research is very difficult, although many of the larger R&D challenges are being addressed through major initiatives in the US and EU. However, economic challenges remain. Any new antibiotics that are developed will need to be reserved - rightly so - as a last line of defence. This means companies are investing in R&D for products that may never be used. There must be a way for them to recoup their investment.

Rex says the an-



**"a frighteningly thin pipeline of novel agents"**

swer is to find an effective way to delink the amount of the products used from the revenue that accrues to the developer. There are already efforts underway to find ways effective ways to do this, with promising results. He cited an approach currently being modelled in the UK between the department of health and the association of the British pharmaceutical industry to a fully delink antibiotic purchase. "If put into practice, the model will create a powerful new model for addressing the critical challenge of resistance to antibacterial agents."

Richard Bergstrom, Director General of the pharmaceutical industry trade association EFPIA, says the industry is doing its part. However, the problem of antimicrobial resistance was a global one, and requires a response to match. "If we are to successfully develop - and preserve - new antibiotics, we need a comprehensive plan at a global level." Any plan, he said, "should include a mechanism that dedicates some of these new antibiotics under development for exclusive use →



in humans. They should not be used in animals.”

Bergstrom’s comments provided a useful reminder that the challenges surrounding antibiotics use extend further than human use; antibiotics are an important component in animal welfare. Roxane Feller, Secretary General of IFAH-Europe, the Interna-

**“We require a comprehensive plan at a global level”**

tional Federation for Animal Health, agrees resistance is a serious concern, both for the public and for animal health. “Managing the issue”, she said, “requires collaborative action from policymakers, scientists, industry, veterinarians, farmers, medical professionals and the general public.”

She stressed that IFAH-Europe members have had a long-standing commitment to the responsible use of antibiotics, urging that they are used

carefully and prudently to maintain their effectiveness and minimise any increase in resistance. “We support efforts for monitoring both antibiotic use on farms and the development of resistance. Our industry has always strongly supported target pathogen monitoring by the European Animal Health Study Centre (CEEESA). We have also taken part in the European Surveillance of Veterinary Antimicrobial Consumption, sponsored by the European Medicines Agency, which is aimed at assessing veterinary antibiotic usage at member state level. The latest report suggests that sales of antibiotics for animal use fell by eight per cent between 2011 and 2013.

The contribution of antibiotic use in animals was also touched on in the Pedicini report. “This aspect needs to be monitored and controlled”, he said. “The use of antibiotics in animals affects antibiotic resistance in humans.”

This point was echoed by Ilaria Passarani, Head of the Food and

Health Department at European consumer champions BEUC. She shares concerns over the impact of antibiotic use in animals. “Consumers are often advised to go easy [on antibiotics], but this advice should also extend to farm animals” she said. “Resistant bacteria that develop at the farm travel from livestock to humans via air, water and contact. This means that all consumers are affected, not only meat eaters.”

She supports the European Parliament’s wishes to ‘beef up’ the Commission’s proposals by banning the administration of antibiotics to healthy animals. “We do not have time to spare,” she added, “only strict EU-wide rules will prevent a cut finger from becoming a potentially serious health risk once again.” As research to identify new treatments continues, EU citizens need to make sure that they do what they can to prevent further spread of resistance. The EAAD materials are a good place to start. ★



# INTEGRATE

A MSCA-ETN Project Directed to the Training of a New Generation of Scientists Active in the Field of Antibacterial Research

Gabriele Costantino, University of Parma (Italy)  
Scientific Coordinator



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The inexorable rise in resistance against commonly-prescribed antibiotics such as fluoroquinolones, carbapenems, cephalosporins and aminoglycosides is posing a serious health for the public health

worldwide. Therapeutic options for multi-resistant Gram-negative pathogens in particular are becoming increasingly limited and each year in the EU multidrug-resistant bacterial infections result in the death of ca. 25,000 patients with an extremely high healthcare costs and productivity losses. Therefore, there is an urgent need for better antibiotic stewardship and for the discovery and development of new drugs to fight against Gram-negative bacteria.

INTEGRATE is a multidisciplinary Marie Curie Educational Training Network (ETN) consortium funded by the EU Horizon 2020 Programme, which has the ambitious aim to tackle this challenge head-on. INTEGRATE gathers together 11 academic and industrial beneficiaries from seven countries (Italy, Belgium, Finland, Germany, UK, Latvia, Slovenia) with a broad expertise in disciplines ranging from computational medicinal chemistry, synthetic medicinal chemistry, biochemistry, in vitro and in vivo microbiology. In this coordinated interdisciplinary and intersectorial environment, the recruited early stage researchers (ESR) will develop at best their potential towards a new generation of scientists with improved employability and entrepreneur skills.

INTEGRATE has started on January 1st, 2015, and has recruited all the ESR through a transparent and iterative selection procedure, finalized with a recruitment workshop held in Verona (Italy) at the Aptuit research center. While recruitment has been strongly based on scientific quality and enthusiasm for research, a large attention has been paid to geographical and gender representation.

These ESR are now actively working on their research projects, which are based on the notion that the targets for most of the conventional antibacterials are essential gene products, such as those involved in bacterial cell wall biosynthesis, protein synthesis, or DNA replication. Consequently, there is a very strong evolutionary selection pressure for resistance to arise against such compounds. It is now accepted that identification of novel drug targets and non-conventional mechanisms, as well as the development of novel chemotypes is central to the fight against bacteria. An alternative approach is to not kill the bacteria, but instead, to attenuate their fitness. The rationale behind this emerging concept, which is attracting increasing interest from many sectors, is that by attenuating bacterial fitness the host immune system will be given a greater window of opportunity in which to clear the infection.

As usual for EU funded projects, INTEGRATE will disseminate the main achievements also to the general public and will actively seek collaboration with other EU funded projects on antibacterials in order to maximize the synergy.



INTEGRATE Recruitment Workshop: Beneficiaries and applicants (Aptuit, Verona)



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# EU robotics rules: right time to address ethical issues

To turn the robotics revolution into an opportunity, the EU needs a sound legal framework, writes **Mady Delvaux**



**Mady Delvaux** (S&D, LU) is Parliament's rapporteur on civil law rules on robotics

**R**obotics are one of the most relevant technological innovations of this century, a revolution that will impact society and the economy in many ways. Today, surgical robots assist surgeons. Search and rescue robots collaborate with people in executing dangerous tasks such as decommissioning. Agricultural robots are increasingly used on our farms and fields. Other robots augment human capabilities with exoskeletons enabling elderly or disabled people to move. In the near future, driverless cars could populate our streets. The sheer range of robotics is spectacular.

This variety entails a challenge to define what exactly a 'robot' is. This is very difficult, because Parliament's report will cover all kinds of robots: industrial robots, service robots – such as hoovers and intelligent fridges – health and surgical robots, drones, cars and artificial intelligence (AI). We know where we will start, but not where we will end.

Generally speaking, EU regulations are either unclear or non-existent in the field of robotics. For example, the current legal framework is not fit for autonomous machines and human-robot collaboration and interaction.

To transform the robotics revolu-

tion into an opportunity for Europe, we should set up a working group on the legal and ethical implications of robotics and AI. Taking action at European level will provide legal certainty, ethical guidance and scale for the many European start-ups and SMEs excelling in robotics.

Liability rules and insurance, data protection, cyber security and regulation of human enhancement have been identified as the main legal challenges for all robotics. Autonomous and self-learning robots raise moral and ethical questions that we will address. Immediate and specific action



## I, ROBOT

Science fiction author Isaac Asimov devised the three Laws of Robotics in the 1940s during his famous robot-based stories period. The three laws were based on so-called positronic robots that had almost human-like levels of AI. Asimov's three laws are:

- A robot may not injure a human being or, through inaction, allow a human being to come to harm
- A robot must obey the orders given it by human beings except where such orders would conflict with the First Law
- A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws

is required for automated and, in the future, autonomous cars.

It's also important to test robots and see how they act, and what accidents can arise from their interaction with humans. We must also consider the question of equal access – if robots really do make life easier, we need to

ensure everyone can afford them.

The US, China, Korea and Japan are currently working on very ambitious projects. If we do not create the legal framework for the development of robotics, our market will be invaded by robots from outside the EU. The European Parliament could be the first Parliament in the world to discuss and create such a legal framework.

I truly believe robotics will bring about a

revolution. Of course, this will eliminate certain kinds of jobs, but it will also create new ones. If industry uses more automation robotics, it will become more efficient and competitive, allowing companies to relocate their production back to Europe.

Now is the right time to decide how we would like robotics and AI to impact our society, by steering the EU towards a balanced legal framework fostering innovation, while at the same time protecting people's fundamental rights. ★

# Robotics set to have impact on people with disabilities

Assistive technologies are likely to be of great help in improving the lives of people with disabilities, says **Adám Kósa**



**Adám Kósa** (EPP, HU) is Parliament's employment and social affairs committee opinion rapporteur on civil laws on robotics

**A**s a deaf MEP, when it comes to robotics I am particularly interested in assisted technologies for the inclusion of people with disabilities in society, education and employment. While the opinion I am drafting aims to examine the question from a broader point of view, here I would like to highlight some issues which, too often, are forgotten.

There are many different types of assistive technologies, and in the long run they can change our lives, society and the world as we know it. Robots, 3D printing, autonomous vehicles, brain-computer interfaces, synthetic biology, gene technology, biosensors – all of these could have specific uses

as assistive technologies for people with disabilities. I truly hope assistive technologies will help people with disabilities live an independent life, access inclusive education and have quality working opportunities and conditions.

In order to reach this goal, we must pay attention to cost, so that these technologies and innovations are not only available, but also affordable.

Although this is a huge opportunity for all of us, it is one that raises a series of legal and regulatory challenges. These are mainly of an ethical nature, and they need to be tackled in an efficient and inclusive manner.

This is why I have proposed a science and technology options assessment (STOA) project on 'assistive technologies for the inclusion of disabled people in society, education and jobs', which Parliament plans to launch on the international day of people with disabilities. This subject is timely, given that the Commission is about to publish a proposal on achieving a greater level of accessibil-

ity for people with disabilities.

Therefore, I believe that we need the wider application of accessible solutions to be taken into account if we are to create a more sustainable society. In this regard, we should scrutinise the processes of automatisisation and computerisation, including the crowding-out effects of future technologies. Obviously, these will not only affect people with disabilities,

**“Robots, 3D printing, autonomous vehicles, brain-computer interfaces, synthetic biology, gene technology, biosensors – all of these could have specific uses as assistive technologies for people with disabilities”**

but also people without disabilities who have low skills and competencies. Will they lose their jobs to automats, or will their competencies be enhanced through new technologies? My opinion will evaluate the further application of assistive technologies, and solutions will be examined in the wider context of an open labour market in Europe, and in line with new technological developments.★





**N**ew innovative methods for teaching and learning science subjects in schools are making science classes fascinating for young students, and the contextualisation of science teaching will also contribute to making jobs in science more attractive.

Science teachers are role models for our young minds, inspiring them to pursue careers in the field and strengthening their general understanding and competences in those core subjects. The contribution of these teachers must be recognised when discussing policies and investments in research and science activities.

Communities that offer teachers formal and informal peer-based learning opportunities empower them and their schools, facilitating a wide-scale implementation of successful pilot initiatives in science education across Europe. Teachers' development must be supported during their initial pre-service education and also through continuing professional development. Innovative initiatives that involve primary or secondary students and their teachers in real-life science research experiments, offering

hands-on experience and trainings by experts, bring textbooks to life.

An innovative, high-quality, trans- and multidisciplinary education increases students' interest in science, technology, engineering and mathematics (STEM). With an aging population, Europe needs to train one million researchers by 2020 if it is to ensure its future prospects as an innovative economy and a knowledge-driven society. Programmes and initiatives that raise awareness about STEM, such as school science weeks or global campaigns, help us develop a more scientific culture in which there is a much greater interest in and understanding of STEM, both as subject areas and as possible career opportunities.

An open science community increases public awareness and curiosity about STEM subjects and how they impact our everyday lives. Responsible research and innovation (RRI) improves public understanding of scientific findings through extensive cooperation with societal actors in STEM education. Teachers and educators are at the core of this open science community, which is not only European but truly international.

Attitudes towards STEM education and careers are believed to have a strong influence on the final number of science graduates. An international research project called The Relevance of Science Education (ROSE) revealed that the more developed a country, the less inclined young people are towards education and careers in STEM.<sup>1</sup> Research suggests that today's youth wish to study and work in a field that is meaningful and fits with their values and concerns, and that they do not think they will find this in STEM. This problem is particularly acute among women, in relation to specific areas such as maths, ICT and physics. Teachers can turn this around by adopting innovative new ways of teaching science and bringing it closer to students' reality.

For the past six years, the Scientix project has collected best practices in science teaching and also organised training sessions for thousands of STEM educators across Europe. Funded by the Seventh Framework Programme and as of next year by the Horizon 2020 programme of the European Union,<sup>2</sup> this project has created an excellent tool for educators who want to experiment in their classroom or to adopt innovative teaching and learning methods. Teachers can access nearly one thousand teaching materials and even request translations into their native languages.

This success story shows us how European investment in science education can create learning environments that provide teachers with the necessary skills and motivation to inspire future generations of scientists.



**Marc Durando**  
**Executive Director**  
**European Schoolnet**



Scientix (2012-2015) is supported by the European Union's Framework Programme for Research and Development (FP7) and coordinated by European Schoolnet. This article reflects the views only of the author and it does not represent the opinion of the European Commission, and the European Commission is not responsible or liable for any use that may be made of the information contained therein.

# PRIVATE INITIATIVE FIGHTING EUROPE'S PREDICAMENT IN DIGITAL SKILLS

## EUROPEAN ROBOTICS WEEK – A SUCCESS STORY

Private Initiative Fighting Europe's  
Predicament in Digital Skills

Europe's shortage of ICT skills is a commonplace in economics and politics. But who is actually acting, who works on an improvement? As in many other examples, innovation by a royal decree has very little chances to be successful, whereas initiatives "bottom-up" are much more rewarding. This was the origin of European Robotics Week in 2011, when robotics pioneers from industry and research decided to create an annual motivation event which radiates excitement throughout Europe – the enthusiasm to build little robots. Since then, now organised under the auspices of euRobotics, the European Robotics Week has attracted more than 200,000 young and not-so-young Europeans to become involved in hundreds of different robotics activities on a yearly basis. euRobotics managed to gain schools throughout Europe to take up the challenge and demonstrate robotics education at all levels.

## EUROPE'S PREDICAMENT

The speed of technological innovation

witnessed in the past decade has naturally led to a quest for new types of skills. However, quite often, skills don't match up with the speed of the development of technology and industrial processes, which inevitably leads to a gap. While we know that most jobs already require basic digital skills, in Europe we still have as much as 40% of the population and 32% of the workforce with insufficient digital skills.

Europe's ICT sector is currently providing 6.2 million jobs, and there will be up to 825,000 new ICT job vacancies by 2020 <sup>1</sup>. Therefore, if Europe is to remain competitive, a fundamental transformation of education is needed to address new skills and competences, to overcome the current economic crisis and grasp new opportunities <sup>2</sup>.

## STEM EDUCATION IS MORE THAN ICT

There has been an increasing need for digital skills in the workplace that require focus on STEM (Science, Technology, Engineering, Mathematics). These fundamental skills are becoming an important part of basic literacy in today's knowledge society. In order to empower all parts of



### Open Day PAL Robotics, Barcelona, Spain

Robotics aficionados of all ages visited the robotics laboratory, seeing robots in action, as well as meeting the people that make it possible.

### KUKA Workshop and Robotics presentation for children, Augsburg, Germany

Kuka organised a workshop on insights into current developments and future trends in robotics, together with an interactive, child-friendly presentation.

### Nao Buddy Training, Aldebaran, France

Aldebaran held a hands-on training session adapted to Nao's users - beginners and programmers to explore all functionalities of the robot, program NAO, and create interactive behaviors.

### DIRA (Danish Industrial Robot Association) Roadshow – Copenhagen, Denmark

For the first time in the history of the world, a Robot Exhibition of the magnitude was held at a central train station, with 100.000 people encountering robots and automation technologies.

### European Robotics Week 2015 BRISTOL: THE COMMUNICATION CENTRE

Following the success of the Communication Centre at Cité de l'Espace in Toulouse, the Bristol Robotics Laboratory was appointed as the heart of the European Robotics Week 2015. Bristol will host a debate with leading European and UK experts about robots and society, a full-day workshop on latest research in robotics, and a Buildathon with 100 kids building 100 robots to "treat cancer".

[www.roboticsweek.eu](http://www.roboticsweek.eu)



<sup>1</sup> <http://ec.europa.eu/digital-agenda/en/ibg/here-how-we-will-improve-digital-skills-and-create-more-jobs-europe-0>  
<sup>2</sup> <http://www.mainsreaming.com/2014/04/04/mainsreaming-ict-enabled-innovation-in-education-and-training-in-europe-2014/>

## KEY FIGURES ABOUT GIRLS IN SCIENCE IN EUROPE

# 29

OUT OF EVERY 1,000 FEMALE GRADUATE HAVE A COMPUTING OR RELATED DEGREE, AND ONLY 4 GO ON TO WORK IN ICT-RELATED ACTIVITIES <sup>3</sup>

WOMEN ACCOUNT FOR LESS THAN

# 20%

OF EMPLOYEES IN ICT-BASED CAREERS <sup>4</sup>

our society and ensure the global competitiveness of Europe, raising interest in STEM and enhance the digital competence of Europe is a must.

European Robotics Week is one such endeavour and aims at inspiring students of all ages to pursue careers in STEM-related fields. Last year's event inspired over 500 events throughout Europe and euRobotics hopes to make 2015 even more successful.

### ROBOTICS EDUCATION IS MORE THAN STEM: SKILLS FOR JOBS OF TODAY AND TOMORROW

Robots are able to capture the public's imagination like no other tool by creating a fun, interactive and independent educational process. By learning how to program the robot, how to use its sensors and define its movements, certain physical, geometrical and mathematical concepts are incorporated into the learning process. Therefore, the child tacitly learns STEM by watching and interacting with robots, very often in

competitions such as "robots playing football" or "robots dancing".

Equally important is the self-esteem delivered by a successful hands-on experiment and the possibility to learn "soft" skills, like creativity, innovation, team work, problem solving, and adaptability in changing environments.

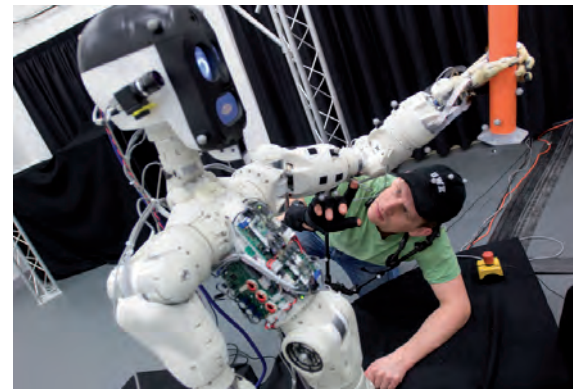
Robotics even triggers entrepreneurship – frequently, a hobby becomes a profession and many start-ups in robotics have their origin in building robots.

### OPPORTUNITIES FOR GIRLS

According to experts, girls typically engage better with science when it is taught in context but they also relate well to collaborative, project-based and enquiry-based approaches to teaching and learning. We should move away from classroom scenarios where gender stereotyping functions disengage girls from STEM subjects. Making science more engaging, inclusive and contextual makes it more challenging and fulfilling for both boys and girls.

European Robotics Week is about

diversity and inclusion and if girls are given the stimulus to continue learning STEM subjects, they won't be the only ones to benefit: science and the whole of society will also.



### ABOUT EUROBOTICS

euRobotics is a non-profit organisation based in Brussels with the objective to turn robotics beneficial for Europe's economy and society. With more than 250 member organisations, euRobotics also provides the European Robotics Community with a legal entity to engage in a public/private partnership with the European Commission, named SPARC.

SPARC is the largest civilian-funded robotics innovation programme in

the world, which aims to strategically position European robotics, thereby securing major benefits for European economy and the society at large.



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# Robotics set to generate new jobs

While people may worry about robots taking their jobs, history has shown that the rise of machines is conducive to a rise in employment, explains **Kaja Kallas**



**Kaja Kallas** (ALDE, EE) is a member of Parliament's robotics and artificial intelligence working group

**W**hen it comes to robotics, the question on everyone's lips is, "are robots taking our jobs, and if so, what is left for people?" In 1967, Hermann Kahn wrote a book titled, 'The Year 2000', in which he predicted what our lives would be like in 2000. Even back then, futurologists foresaw that in the year 2000, none of us would have to work, because it would all be done by robots. They said the only thing people would have to think about would be how to entertain themselves. This is not really how things have worked out. However, today there is still talk of robots taking over our jobs.

Will this be the case, and should we tackle the issue somehow?

It is true that automation has increased over the years. But conversely, this

has also increased employment. In Parliament's robotics and artificial intelligence working group, my colleagues and I have heard many presentations on this topic. For exam-

ple, Maarten Goos, a scientist from Leuven and Utrecht universities, explained that jobs, when we talk about robots, can generally be divided into four categories. The first two refer to existing jobs. These are current jobs that humans can do, but that machines will do better, and current jobs that humans can't do, but machines can. The other two categories refer to jobs that only humans will be able to do – at first – and robot tasks that we cannot even begin to imagine yet.

Goos showed graphs demonstrating how, following the industrial revolution, employment grew simultaneously with the rise of mechanisation. So far, operating a robot or a machine requires someone to have created it, written the software, assembled it and to maintain it. As this categorisation of jobs clearly shows, some jobs that we know today will vanish, but new ones will appear.

It is not true that the rise of robots only threatens low-skilled jobs. Machine learning enables the robots to learn from other machines and the internet. Therefore, robots might also do jobs that require creativity, and that they were not able to deliver before.

But what are the jobs that only humans can do at the moment? They are the jobs that require emotional skills, such as communication and managing people. Writing software for a robot to communicate and understand feelings the way humans do is too complicated.

In answering the question of whether policymakers should do something to avoid robots taking people's jobs, I am of the opinion that you can't stop innovation. However, we must be flexible enough to make the necessary changes to allow new jobs for humans to be created. ★

**“Following the industrial revolution, employment grew simultaneously with the rise of mechanisation”**

# Robotics at the heart of disruptive technology

Robotics can offer tremendous opportunities, but it also poses many unanswered questions, writes **Rajnish Singh**

**A**s long ago as ancient Greece, when legend told of Jason and the Argonauts' fight against the bronze giant Talos, robots have been a source of inspiration in popular culture. Now, in the 21st century, the European Commission is also inspired by the importance of robots in helping Europe deal with current and future challenges facing society and policymakers. As part of its digital agenda, the Commission is actively promoting research and innovation in creating "better and safer" robots, and wants to build a scientific base from where to "push the limits of the technology".

The Commission's DG Connect sees androids as a rapidly developing market driven by the development of innovative products in areas as diverse as manufacturing, surgery, healthcare, driverless cars and agriculture.

According to DG Connect, the rapid increase in the use of robots in homes, hospitals and industry "provides an inspiring vision about how they can benefit society as a whole." Already, the Commission is supporting more than 120 projects and collaborating with member states, industry, universities and research institutes.

Integral to the spread of robotic technology is 3D printing. This technology allows specialised parts to be produced anywhere in the world

as long as you have an internet connection, and the space for the 'printing machine'. According to Dumitru Fornea, the Romanian European Economic Social Committee (EESC) rapporteur on 3D printing, "additive manufacturing (AM) is one of the key enabling technologies that will shape new approaches to manufacturing and the products and factories of the future...that can also enable Europe to re-shore production from lower wage regions."

The Romanian warns that if the EU does not take action now to embrace this technology, "it will lose its competitive edge and fall behind in the race for new markets."

However, Fornea accepts that 3D printing will pose challenges for society. "AM will not only have a disruptive impact on economy, industry and trade, but also on existing European

**"People need to be prepared for the challenges of the digital society and of disruptive technologies through cultural, educational and training programmes"** Dumitru Fornea

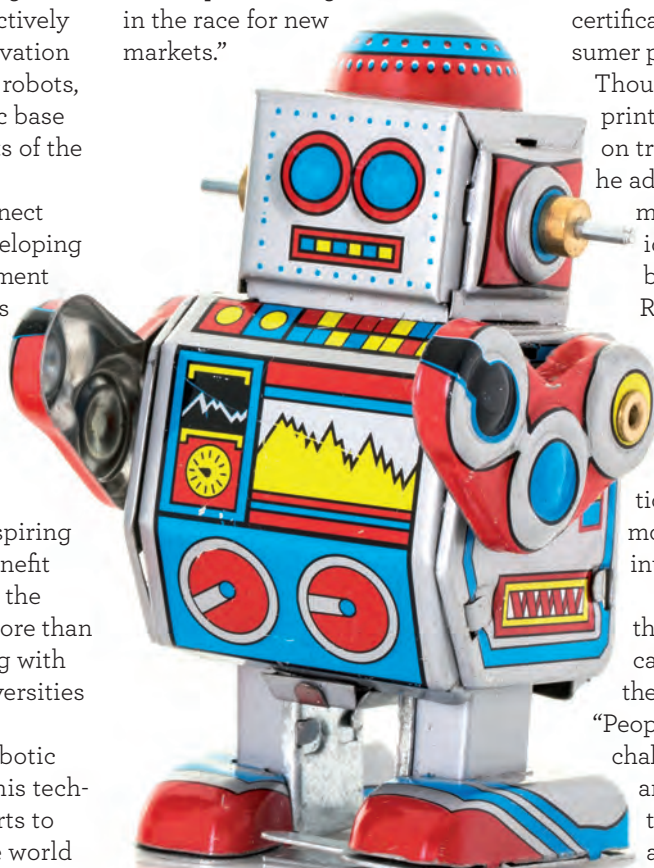
and international legal systems."

The EESC rapporteur wants to see the establishment of a new EU and national regulatory 'framework' to deal with issues such as standards and certification, intellectual property, consumer protection and labour relations.

Though Fornea is pretty certain 3D printing will have a direct impact on traditional production methods, he admits "their impact on employment figures is very hard to identify; as yet no studies have been carried out."

Reflecting on the major changes robotics and 3D printing can have on society and jobs, the EESC rapporteur believes policymakers have to come up with new "societal innovations and new organisational models to represent workers' interests."

According to Fornea, one of the immediate things the EU can do is help society adjust to the onset of this new technology. "People need to be prepared for the challenges of the digital society and disruptive technologies through cultural, educational and training programmes." ★



# Reconfigurable ROS-based Resilient Reasoning Robotic Cooperating Systems



© by Jakub Głowska, PMAP

## EXECUTIVE summary

R5-COP focuses on agile manufacturing paradigms and specifically on modular robotic systems. Based on existing and newly developed methods for the formal modelling of hardware and software components, R5-COP will support model-based design, engineering, validation and fast commissioning. Using existing interface and middleware standards, R5-COP will be a strong facilitator of the integration of components from various suppliers.

## CONTRIBUTION to SRA

The R5-COP project will provide a platform and toolset containing methods, algorithms, prototypes and living lab solutions for cross-domain reusability, scalability and open interface standards for robotic and autonomous systems. It will contribute to the ARTEMIS Repository by connecting to other ASP and AIPP initiatives, to ensure long-term sustainability and impact on society. Key results will be demonstrated in a set of showcases, displaying high relevance to industrial and manufacturing issues and cross-domain applicability. Regarding interoperability, R5-COP will also contribute to establishing a standard for robust, reliable reconfigurable robot systems,

using common interfaces in a certification and safety context, which entails conformity to both domain-specific and international domain-independent standards, thereby fostering a significant increase in market potential.

## MARKET INNOVATION & impact

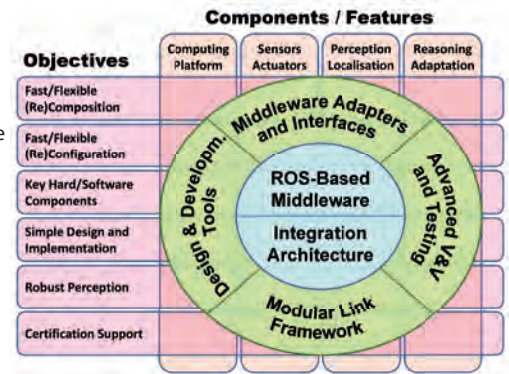
R5-COP focuses on agile manufacturing paradigms and specifically on modular robotic systems to overcome the shortcomings of existing solutions, by firstly identifying and extending suitable existing methods and, where required, developing new ones to formally model hardware and software components. Furthermore, the use of existing interface and middleware standards such as ROS will strongly facilitate the integration of components from various suppliers. Such a modular approach is not only flexible, but will also reduce design, setup and maintenance costs. Given the level of human/robot cooperation, robustness and safety will be assured by dedicated verification and validation methodologies. The formal specification framework will support component suppliers in efficiently verifying and certifying their modules. This project will identify and develop reconfigurable key hardware and software components, employing living labs to show the feasibility and capability in manufacturing and service demonstrator environments.

## RELEVANCE & CONTRIBUTION

The R5-COP project addresses the ARTEMIS Sub-Programmes ASP4 ("Embedded Systems for manufacturing and process automation"), ASP1 ("Methods and processes for safety-relevant Embedded Systems") and ASP5 ("Computing platforms for Embedded Systems").

In terms of ASP4, it specifically addresses improved methods and technologies for automation model life cycle management, online real-time quality assurance of measurement data, robustness of sensor and actuator technology, e.g., calibration, energy harvesting and disposability, automation system human/user interface context awareness and information timing, and automated device configuration.

Due to the delicate nature of robot and automation systems, there is a strong focus on safety and security. Hence, the project also specifically addresses core ASP1 topics, particularly requirement management, architecture modelling and exploration, analysis



methods, and component-based design, particularly building reliable systems out of unreliable components.

Technology-wise, R5-COP is closely tied to work in the field of ASP5, especially with respect to complex distributed heterogeneous systems supporting real-time awareness, safety protection and Cyber-Physical properties, such as complex real-time sensor-data fusion. The project aims to target ASP5's main goal of enabling an increase of cross-domain re-use and interoperation, thus leading to lower costs of ownership and wider applicability.

R5-COP also covers aspects of ASP8 ("Human-centered design of Embedded Systems") with respect to the human-centred design of human-machine interfaces, object recognition, scene analysis, real-time image processing and cognitive assistance. It is motivated by usage scenarios from ASP2 ("Embedded Systems for Healthcare and Wellbeing"), ASP3 ("Embedded Systems in Smart Environments") and ASP6 ("Embedded Systems for Security and Critical Infrastructures Protection").



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# R5-COP

## R&D INNOVATION and technical excellence

The main objective of the R5-COP project is to provide the means for fast and flexible adaption of robots to quickly changing environments and conditions, to enable safe and direct human/robot cooperation and interaction on an industrial scale. To overcome the shortcomings of existing robotic solutions, it focuses on the following objectives:

- Enabling *fast and flexible re-composition of software and hardware components* of robotic systems, while ensuring robust and safe operation, through the modular design of the components with formalised specifications and standardised interfaces.
- Enabling *standardised yet simple design and implementation of software components*, through using ROS Industrial for software deployment and SDKs for software development.
- Enabling *standardised yet flexible (re) configuration*, using ontologies of configurable components for modelling hardware and modelling applications on an app or skill level.
- Ensuring *robust perception*, using advanced reconfigurable sensor systems modules.
- Supporting *component and system certification for safe human/robot cooperation*, using dedicated V&V techniques.
- *Identifying, modelling, developing and evaluating key hardware and software components*, using dedicated use cases from industrial and service domains.



## PROJECT HISTORY AND FORMATION

To reach these ambitious goals, the R5-COP project builds upon the results of its ARTEMIS Call 2009 predecessor R3-COP, which particularly dealt with aspects of autonomous behaviour, most notably orientation and autonomous task-execution in a safe, resilient, and fault-tolerant manner. In order to achieve wide applicability of the developed approaches, a software-modular approach was already employed, ensuring the successful application of core results in the project's wide variety of demonstrator platforms.

R5-COP picks up the modular approach and goes beyond, by introducing advanced flexibility. Featuring the use of the Robot Operating System (ROS) enables enhanced modularity, by the functionality being encapsulated in so-called ROS nodes (software modules) and ROS modules (hardware modules).

With originally 31 partners from 13 countries, R5-COP features an even bigger consortium than its predecessor. This is particularly noteworthy, given that R5-COP was struck with depletion of national funding in several partner countries, lowering the project's original planned budget by more than 42%. R5-COP however was and is of the highest relevance, so a number of partners accepted participation at reduced, or even without, national funding. Where this led to vacancies within the project due to the accordingly reduced work effort, R5-COP was able to gain additional partners from other countries, not only filling these vacancies, but even taking over key roles within the project, hence furthermore emphasising the relevance of R5-COP's topics.

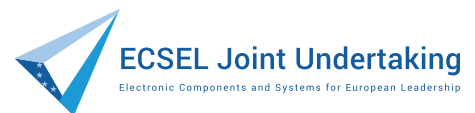


As a result of the first 18 months of project runtime, not only significant boost was given to participating industrial and research partners, but also a new SME was founded and subsequently integrated into the consortium as a full partner. The project was publicly featured on the 2015 ARTEMIS/ITEA2 CoSummit (Berlin, Germany; March 2015), particularly demonstrating work from the fields of human/machine interface, mapping and localisation, orientation, and autonomous operation. R5-COP was awarded the 2015 ARTEMIS Summit Exhibition Award, and subsequently chosen as one of three featured projects for being presented at the ARTEMIS-IA exhibition during ICT2015 (Lisbon, Portugal; October 2015). With the second project year ending in January 2016, the remaining project runtime focuses on testing, validation, and implementation of developed modules and techniques into the various robot demonstrators, their middleware, and according development tools.



## PROJECT INFORMATION

**Project acronym:** R5-COP  
**Project coordinator:** Dr. Rainer Buchty  
**Institution:** TU Braunschweig  
**Email:** buchty@c3s.cs.tu-bs.de  
**Website:** www.r5-cop.eu  
**Duration:** 36 months  
**Start:** 1 February 2014  
**Total cost:** €13.07 m  
**Partners:** 30  
**Countries:** 12

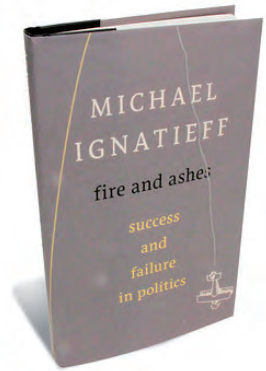


This project is bipartitely funded via ECSEL-JU (#621447, ARTEMIS Call 2013) and national grants

# 5



liberals, who writes with an astonishing honesty about how he failed in politics. It's not often, in any walk of life, that you find so much openness



about what went wrong and what had to be done to overcome the hardship.

## Questions with... *Guy Verhofstadt*

**1. WHAT IS THE SMALLEST CHANGE YOU HAVE MADE IN YOUR POLITICAL CAREER THAT HAS HAD THE BIGGEST POSITIVE RESULT?**

Leading the Rwanda inquiry in the Belgian Senate. Formally speaking, this wasn't an important function, but it radically changed my views on politics. Until then, I was mainly preoccupied with economic and budgetary issues. The genocide in Rwanda opened my eyes on the vital importance of human rights, civil liberties and foreign policies. It taught me that politics are much more than balancing the budget and managing the status quo.

**2. IS THERE ANYTHING YOU HAVE PERSONALLY ACHIEVED OR DONE THAT WOULD SURPRISE PEOPLE?**

Cycling up Mont Ventoux in less than two hours, or racing at 200km an hour on the Spa-Francorchamps track.

**3. HOW WOULD YOU DESCRIBE YOUR POLITICAL STYLE IN THREE WORDS?**

Outspoken, radical, liberal.

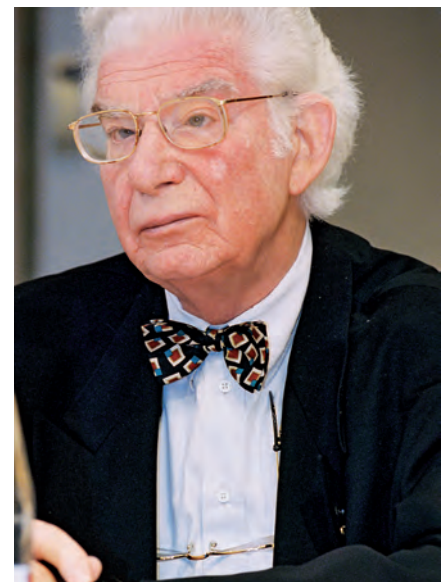
**4. WHAT WAS THE MOST INSPIRATIONAL AND INFLUENTIAL BOOK YOU HAVE READ?**

The last inspirational book I read was 'Fire and Ashes' by Michael Ignatieff, former leader of the Canadian

**5. WHICH PERSON THAT YOU HAVE WORKED WITH HAS MOST INSPIRED YOU IN YOUR CAREER, AND HOW?**

That would be Willy De Clercq, who was my political father and taught me first the ins and outs of local politics in Ghent and later national politics in Belgium. I wouldn't do him justice by just summing up all the things I learned from him. He was a remarkable politician who understood the power of words and who transformed the Flemish liberal party from an elitist club to a broad people party. He was also a great European, a member of the European Commission and Chair of the European Liberal party. ★

**Guy Verhofstadt** (BE) is Chair of Parliament's ALDE group



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