STUDY

For the AFCO committee

European Parliament

Smart Border 2.0
Avoiding a hard border on the island of Ireland for Customs control and the free movement of persons

Constitutional Affairs



Policy Department for Citizens' Rights and Constitutional Affairs

Directorate General for Internal Policies of the Union

PE 596.828- November 2017

EN

DIRECTORATE GENERAL FOR INTERNAL POLICIES

POLICY DEPARTMENT FOR CITIZENS' RIGHTS AND CONSTITUTIONAL AFFAIRS

CONSTITUTIONAL AFFAIRS

Smart Border 2.0
Avoiding a hard border on the island of Ireland for Customs control and the free movement of persons

STUDY

Abstract

This study, commissioned by the European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs at the request of the AFCO Committee, provides background on cross-border movement and trade between Northern Ireland and Ireland and identifies international standards and best practices and technologies that can be used to avoid a 'hard' border as well as case studies that provide insights into creating a smooth border experience. The technical solution provided is based on innovative approaches with a focus on cooperation, best practices and technology that is independent of any political agreements on the UK's exit from the EU and offers a template for future UK-EU border relationships.

PE 596.828 EN

ABOUT THE PUBLICATION

This research paper was requested by the European Parliament's Committee on Constitutional Affairs and was commissioned, overseen and published by the Policy Department for Citizens' Rights and Constitutional Affairs.

Policy departments provide independent expertise, both in-house and externally, to support European Parliament committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU external and internal policies.

To contact the Policy Department for Citizens' Rights and Constitutional Affairs or to subscribe to its newsletter please write to: poldep-citizens@europarl.europa.eu

Research Administrator Responsible

ERIKSSON Eeva
Policy Department for Citizens' Rights and Constitutional Affairs
European Parliament
B-1047 Brussels
E-mail: poldep-citizens@europarl.europa.eu

AUTHOR(S)

Lars KARLSSON, President of KGH Border Services; Former Director of World Customs Organization; Deputy Director General of Swedish Customs

LINGUISTIC VERSIONS

Original: EN

Manuscript completed in November 2017
© European Union, 2017

This document is available on the internet at:
http://www.europarl.europa.eu/supporting-analyses

DISCLAIMER

The opinions expressed in this document are the sole responsibility of the author and do not necessarily represent the official position of the European Parliament.
Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

CONTENTS

CONTENTS 3

LIST OF ABBREVIATIONS 5

LIST OF TABLES 7

LIST OF MAPS 8

LIST OF FIGURES 8

EXECUTIVE SUMMARY 9

1. INTRODUCTION 12

2. GENERAL INFORMATION – TRADE AND MOVEMENT BETWEEN IRELAND AND NORTHERN IRELAND 13

2.1 Softening the border – Historical context 14

2.2 Value of trade across the border 14

2.3 Types and nature of businesses trading across the border 14

2.4 Cross-border movements - Trade 15

2.5 Passenger vehicle movements 16

2.6 Cross-border movement of persons 16

3. Potential impacts of a hard border 17

3.1 Typical border processes 17

3.2 Trade in goods and a 'harder' border 18

3.2.1Interconnected trade and industry 18

3.2.2 Impacts of a 'harder' border 18

4 Smart Borders 21

4.1 A solution that meets a range of political outcomes 21

4.2What is a smart border? 21

4.3International standards and best practices 22

4.3.1 Trusted Traders 22

4.3.2 Frequent cross-border travel 23

4.3.3 Integrated border management 23

4.3.4Keeping the border open 24

4.3.5 Single Window 24

4.3.6 Gateway solution 25

4.3.7 Green Corridor 25
4.4 Technology Solutions 25

5.'Smart border' case studies 27

5.1 Sweden – Norway 27
5.1.1 Legal framework 27
5.1.2 Border trade and cross border traffic 28
5.1.3Border Operations 29
5.2 Canada — United States 31
5.2.1 Legal Framework 31
5.2.2 Border trade and cross border traffic 31
5.2.3 Border Operations 33
5.3 Australia — New Zealand 34
5.3.1Legal Framework 35
5.3.2 Border trade and cross border traffic 35
5.3.3 Border Operations 36

6. Proposed Technical Solution for the IRISH BORDER – Smart Border 2.0 37

6.1 Focus on an open border 37
6.2 Free movement of persons 37
6.2.1 Free movement lanes 37
6.2.2 Enhanced driver's licenses or permits 38
6.2.3 Use of RFID and ANPR 38
6.2.4 Cooperative approach 38
6.2.5 Frequent traveller program 38
6.3 The Smart Border 2.0 38
6.3.1 Background 38
6.3.2 The proposed solution 39
6.3.3 What is required for a Smart Border 2.0 solution? 40
6.3.4 Key concepts 41

ANNEX 1 44

LIST OF ABBREVIATIONS

AEO	Authorised Economic Operator
ANPR	Automatic Number Plate Recognition
CBSA	Canadian Border Services Agency
CDRP	Commercial Driver Registration Program
CER	Australia-New Zealand Closer Economic Relations Trade Agreement
CSRGT(NI)	Continuing Survey of Road Goods Transport (NI)
CSO	Irish Government Central Statistics Office
CTA	Common Travel Area
C-TPAT	Customs-Trade Partnership Against Terrorism
EC	European Commission
EEA	European Economic Area
EU	European Union
EUR	Euro
FAST	Free and Secure Trade Program
GBP	Great Britain Pounds
GDP	Gross Domestic Product
HGV	Heavy Goods Vehicle
HMRC	Her Majesty's Revenue and Customs
IBM	Integrated Border Management
IE	Ireland
LCV	Light Commercial Vehicle
MI	Michigan, USA

NAFTA	North American Free Trade Agreement
NI	Northern Ireland
NISRA	Norther Ireland Statistics and Research Agency
NY	New York, USA
ON	Ontario, Canada
PAPS	Pre-Arrival Processing System
PARS	Pre-Arrival Registration System
PIP	Partners in Protection
RFID	Radio Frequency Identification
SAFE	Framework of Standards to Secure and Facilitate Global Trade
SIC/SITC	Standard International Trade Classification
SME	Small and Medium Enterprise
UCC	Union Customs Code
UK	United Kingdom
US CBP	United States Customs and Border Protection
WCO	World Customs Organization
WTO	World Trade Organization

LIST OF TABLES

TABLE 1

(2016) Estimated two-way value of trade in goods 14

TABLE 2

Types and nature of businesses trading across the border 15

TABLE 3

Estimated two-way HGV and LCV movements 15

TABLE 4:

(2016) Estimated HGV and LCV movements 16

TABLE 5

(2017) Estimated two-way monthly passenger vehicle border crossings 16

TABLE 6

Estimated cross-border workers and students 16

TABLE 7

(2016) Exports in goods between Sweden and Norway 28

TABLE 8

(2012) Estimated monthly HGV at five major Sweden-Norway border crossings .. 28

TABLE 9

(2012) Estimated monthly car crossings a busiest border crossing point 28

TABLE 10

(2016) Exports in goods between Canada and the USA 31

TABLE 11

(2016) Average monthly two-way truck crossings – selected border crossings 32

TABLE 12

(2014) Estimated monthly number of car crossings US-Canada border 32

TABLE 13

(2016) Exports in goods between Australia and New Zealand 35

TABLE 14

(2009) Export cargo ship arrivals Australia and New Zealand 35

TABLE 15

(2016) Estimated movements between Australia and New Zealand..... 36

LIST OF MAPS

MAP 1

Ireland and Northern Ireland 13

MAP 2

Northern Ireland and Ireland Border Region 13

LIST OF FIGURES

FIGURE 1

Overview of import process 17

FIGURE 2

Overview of export process 18

FIGURE 4

Pre-Brexit relationships 19

FIGURE 5

Post-Brexit relationships 19

FIGURE 3

Border Posts – Sweden and Norway 30

FIGURE 6

Smart Border 2.0 components 40

FIGURE 7

The Customs Gateway 41

EXECUTIVE SUMMARY

Background

The European Union (EU) as well as the governments of the United Kingdom (UK) and Ireland have stated their commitment to avoid a hard border between Ireland and Northern Ireland and to the maintain the Common Travel Area (CTA). However, the withdrawal of the UK from the EU will create a requirement for some form of border controls on both sides of the Irish border. Given the uncertainty around the final shape of any agreements between the EU and the UK as well as the time taken to implement any solutions at the border, it is important that what is implemented is flexible enough to meet all political outcomes. Such solutions should also be scalable, as they can provide a template for future UK-EU border processes.

The economies of Ireland and Northern Ireland are highly interconnected. Trade between the two is worth more than €2.5 billion and a large number of businesses and jobs are reliant on cross-border trade. Small and medium sized enterprises in particular take advantage of the opportunities for trade between Northern Ireland and Ireland.

There are more than 200 crossing points along the 500 kilometre border and it is estimated there are more than 3.1 million passenger vehicle crossings per month. More than 170,000 trucks and 250,000 light commercial vehicles cross the border each month and 23,000 people commute across the border for work. Intra-company supply chains are also highly dependent on cross-border movement with processing occurring on either side of the border.

The reduction in trade as result of a 'hard' Brexit has been estimated at €430 million. Under the CTA, there are currently no controls on travel between Northern Ireland and Ireland. It has been estimated that if border controls were introduced between Schengen countries – where free movement is also currently permitted - it would result in delays of 30-60 minutes for trucks and 10-20 minutes for cars. Documentation and compliance costs associated with trading across borders have been estimated to add between 2% and 24% to the cost of goods. According to one estimate, complying with certificate of origin requirements alone would add over €450 to the cost of shipping goods across the Ireland-Northern Ireland border.

There have been significant developments around the world in creating 'smart borders' that bring together international standards and best practices and new technologies to create low-friction borders that support that fast and secure movement of persons and goods.

Standards and best practices such as domestic and cross-border coordinated border management as well as trusted trader and trusted traveller programs can significantly reduce compliance requirements and make borders almost friction free. Customs and other border control practices that keep the border open, such as release before clearance, deferred duty payments and clearance away from the border, also help keep the border free of traffic and speed up or even remove the need for processing.

Technologies such as automatic number plate recognition, enhanced driver's licenses, barcode scanning and the use of smartphone apps can also have a significant impact by reducing paperwork and allowing pre- or on-arrival release, which can reduce or even eliminate the need to stop or undergo checks.

Many of these measures have been introduced at borders across the world. At both the Norway-Sweden border and the Canada-US border, low friction borders have been created through a focus on sharing of both data and facilities, the creation of electronic environments

for trade and travel and the use of modern technologies. Both Australia and New Zealand have also focused on utilising technology, in particular bio-metrics, to speed-up the movement of citizens between their respective countries.

In developing a solution for the Irish border, there is an opportunity to develop a friction free border building on international standards and best practices, technology and insights from other jurisdictions.

Proposed technical solution: Smart Border 2.0

This report proposes the implementation of a new border solution that serves both sides of the border with maximum predictability, speed and security and with a minimum burden and cost for traders and travellers. It is based on international standards and operational best practices from different parts of the world supported by state-of-the-art technology.

The solution presented here can also be implemented regardless of the legal framework for the UK's exit from the EU; therefore, the implementation can commence and the solution can be ready to operate with a minimum transition period. In addition, it is also scalable and presents a potential future model for the future movement of persons and goods between the EU and the UK.

Free Movement of persons under CTA:

- Free movement lanes at major border crossings for eligible people covered under CTA;
- Use of enhanced driver's licenses and RFID capabilities;
- Use of ANPR at manned and unmanned border crossings;
- Requirement for people not eligible under CTA to present at a manned border crossing;
- One check: at jurisdiction of entry;
- Creation of a frequent travellers' program for people not eligible under the CTA;
- Legal basis for collaboration and data exchange between Ireland and Northern Ireland/UK.

Create a low-friction border for the movement of goods by:

- A bilateral EU-UK agreement regulating an advanced Customs cooperation that avoids duplication and where UK and Irish Customs can undertake inspections on behalf of each other;
- Mutual recognition of Authorized Economic Operators (AEO);
- A Customs-to-Customs technical agreement on exchange of risk data;
- Pre-registration of operators (AEO) and people (Commercial Travellers' programme in combination with a Certified Taxable Person programme);
- Identification system by the border;
- A Single Window with one-stop-shop-elements;
- A Unique Consignment reference number (UCR);
- A simplified Customs declaration system (100% electronic) with re-use of export data for imports;
- Mobile Control and Inspection Units;
- Technical surveillance of border (CCTV, ANPR etc).

A normal border crossing between Ireland and Northern Ireland in a Smart Border 2.0 concept would potentially be:

A company in Norther Ireland needs to move goods to a client in the UK. The company is pre-registered in the AEO database (AEO status or application for AEO Trusted Trader), a simplified export/import declaration is sent, including a unique consignment reference number. The transporting company is pre-registered in the AEO database and the driver of the truck is pre-registered in the Trusted Commercial Travellers database. The simplified export/import declaration is automatically processed and risk assessed. At the border the mobile phone of the driver is recognized/identified and a release-note is sent to the driver's mobile phone with a permit to pass the border that opens the gate automatically when the vehicle is identified, potentially by an automatic number plate registration system. A post-import supplementary declaration is submitted in the import country within the given time period. Potential controls can be carried out by mobile inspection units from EU or UK with right of access to facilities and data, as required.

In summary:

The first answer to the research question is:
There will be a need of a Customs and Border solution post-Brexit on 29 March 2019 at 23.00, regardless of political solution and Brexit negotiation results. It will have severe consequences if such a Customs and Border solution is not designed, developed and implemented to facilitate the movement of people and trade.

The second answer to the research question is:
It is possible to implement a Customs and Border solution that meets the requirements of the EU Customs legislation (Union Customs Code) and procedures, with expected post-Brexit volumes of cross-border people and goods, if using a combination of international standards, global best practices and state-of-the-art technology upgraded to a Smart Border 2.0 or similar solution.

1. INTRODUCTION

In examining the opportunities to avoid a hard border for customs controls and for the movement of persons, this paper:

1. Provides data on the movement of persons and goods between the two parts of Ireland and the practical impact of a visible border between them;
2. Examines the possibilities provided by modern technology and 'smart border' techniques for allowing disassociating customs control (including, submission of customs declarations, paying VAT and inspections) without hindering free movement of persons;
3. Present case studies from other frequently crossed borders and which could be applied in the case of the Irish border;
4. Proposes technical solutions to avoid a hard border for customs control and for free movement of persons on the island of Ireland while preserving the integrity of the EU legal order, the unity of its single market and the security of its customs union.

The paper begins by presenting the basis for the development of 'smart borders', which involves the incorporation of international standards and best practices as well as technologies to avoid a 'hard' border.

Case studies are also presented that provide insights on measures currently in place and that can be built upon along the Ireland-Northern Ireland border.

Finally, the solution presented aims to be one that can be implemented regardless of the political agreement reached over the United Kingdom's departure from the EU. This solution needs to build on standards, technologies and best practices and take innovative approaches to solving border issues. It should also be scalable and can provide the basis for future UK-EU border relationships.

2. GENERAL INFORMATION – TRADE AND MOVEMENT BETWEEN IRELAND AND NORTHERN IRELAND

KEY FINDINGS

- The economies of Ireland and Northern Ireland are highly integrated with the value of trade between Ireland and Northern Ireland worth more than €2.5 billion in 2016.
- More than 225,000 commercial vehicles and 3.1 million cars cross the border each month. More than 23,000 commuters are estimated to cross the border each month.

Map 1: Ireland and Northern Ireland



Source: National University of Ireland, Maynooth, All-Ireland Research Observatory

Map 2: Northern Ireland and Ireland Border Region



Source: National University of Ireland, Maynooth, All-Ireland Research Observatory

2.1 Softening the border – Historical context

The border between Ireland and Northern Ireland runs for approximately 500 kilometres and has more than 200 crossing points.

From 1923 until the establishment of the European Single Market in December 1992, Customs controls were in place along the Ireland and Northern Ireland border.

The Common Travel Area (CTA) was formulated in 1923 with the establishment of the Irish Free State. The CTA is a mainly administrative arrangement that allows Irish and UK citizens to cross the border with no passport controls. Following the Belfast ('Good Friday') Agreement 1998, border security posts and identification requirements were removed along the border.

In 2011, the UK and Irish governments reaffirmed their commitment to the CTA[1]. Neither Ireland nor the UK are members of the Schengen Area and so maintain passport controls for nationals of other EU countries, although there are currently no passport controls for EU or non-EU citizens at the border between Ireland and Northern Ireland.

As part of the Article 50 negotiating process, both the EU and the UK have recognised the importance of maintaining the CTA and avoiding a 'hard' border[2].

2.2 Value of trade across the border

The figures below exclude trade in services as these do not generally require Customs or other border procedures.

Table 1: (2016) Estimated two-way value of trade in goods

	Value (€ mns[a])
Ireland to Northern Ireland[3]	1,650
Northern Ireland to Ireland	1,050

Notes:
a. All prices current prices. Where required, GBP/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2015

Further detailed information on the value of trade between Ireland and Northern Ireland is available in Annex 1.

2.3 Types and nature of businesses trading across the border

[1] Ireland Department for Justice and Equality and the United Kingdom Home Department, Joint Statement regarding co-operation on measures to secure the external common travel area border, 20 December 2011.
[2] See, in particular: European Commission (2017) Guiding principles for the Dialogue on Ireland/Northern Ireland, Brussels, 20 September (https://ec.europa.eu/commission/publications/guiding-principles-dialogue-ireland-northern-ireland_en); European Council (2017a) Guidelines following the United Kingdom's Notification under Article 50 TEU, EUCO XT 20004/17, Brussels, 29 April (http://www.consilium.europa.eu/en/press/press-releases/2017/04/29/euco-brexit-guidelines/); UK Government (2017a) Northern Ireland and Ireland: Position Paper, London, 16 August (https://www.gov.uk/government/publications/northern-ireland-and-ireland-a-position-paper); and Government of Ireland, Ireland and the negotiations on the UK's withdrawal from the European Union, the Government's approach, May 2017 (https://merrionstreet.ie/MerrionStreet/en/EU-UK/Key_Irish_Documents/Government_Position_Paper_on_Brexit.pdf)
[3] InterTradeIreland, Potential Impact of WTO Tariffs on Cross Border Trade, June 2017.

Table 2: Types and nature of businesses trading across the border

	Number/value
Number of NI businesses selling goods or a combination of goods and services to IE (2015) [4]	5000+
% of NI businesses selling goods alone to IE employing less than 50 people (2015)[5].	92%
Number of NI businesses selling goods alone to IE employing more than 250 people (2015)[6].	53
% of IE SMEs exporting to NI (2013)[7]	15%

2.4 Cross-border movements - Trade

Most goods associated with trade are carried across the border in either heavy goods vehicles (HGV) or light commercial vehicles (LCV).

Table 3: Estimated two-way HGV and LCV movements

Type of vehicles	Movements per month		
	Stakeholder estimates[8][9]	UK Government (2017)[10]	Irish Government (2016)[11]
HGV[a]	177,000	179,000	173,039
LCV[b]	208,000	251,000	216,775

Notes:
a. The EU definition of an HGV is a vehicle with a maximum allowable load of more than 3.5 tonnes
b. Vehicles with a maximum allowable load of up to 3.5 tonnes. Also known in the UK as light goods vehicles (LGV)

[4] NISRA, Broad Economy Sales and Export Statistics (BESES), 2017 – Goods and Services Results, Supplementary data tables, February 2017.
[5] NISRA, Ibid.
[6] NISRA, Ibid.
[7] InterTradeIreland, 'Analysis of the key features of an exporting SME on the island of Ireland', September 2013
[8] Daniel Mulhall, Ambassador of Ireland to the UK, oral evidence to the UK Parliament House of Commons Northern Ireland Affairs Committee, February 2017.
[9] Freight Transport Association Ireland, press release, 'Hard border would be devastating for Irish trade, says FTAI', 16 August 2017.
[10] UK Government, 'Additional Data Paper: Northern Ireland Trade Data and Statistics', August 2017, drawn from Department for Infrastructure (Northern Ireland) Traffic Counter Information (2017), unpublished.
[11] Irish Government, Irish Tax and Customs, Statistics and Economic Research Branch, Ireland and the UK – Tax and Customs Links, July 2017.

Table 4: (2016) Estimated HGV and LCV movements

Type of vehicles	Direction	Movements per month[12]
HGV	North to South	86,415
	South to North	86,624
LCV	North to South	107,458
	South to North	109,317

The busiest crossing for Northern Ireland registered HGVs is the Newry-Dundalk corridor, which represents 50% of all crossings by Northern Ireland registered vehicles[13].

2.5 Passenger vehicle movements

Table 5: (2017) Estimated two-way monthly passenger vehicle border crossings

	Number
Estimated monthly vehicle crossings at the 15 busiest border crossing points[14]	3.1 million

The Irish Government estimates that each month approximately 1 million cars travel from Northern Ireland to Ireland at the twelve major border crossing points[15].

There are over 200 crossing points along the border meaning the number of actual vehicle crossings would be higher. In addition, some roads cross the border several times[16].

2.6 Cross-border movement of persons

Table 6: Estimated cross-border workers and students

	Number
Estimated number of cross-border commuters (to/from NI/IE) (2010)[17]	23,841
Residents of NI aged 16-74 working or studying in IE (2011)[18]	6,456
Residents of IE aged 16-74 working or studying in NI (2011)[19]	8,295

[12] Irish Government, Irish Tax and Customs, Statistics and Economic Research Branch, Ibid.
[13] UK Government, 'Additional Data Paper: Northern Ireland Trade Data and Statistics', August 2017, drawn from Road Freight: CSRGT NI, 2014-2015, Department for Transport, 2016.
[14] UK Government, 'Additional Data Paper: Northern Ireland Trade Data and Statistics', August 2017, drawn from Department for Infrastructure (Northern Ireland) Traffic Counter Information (2017), unpublished.
[15] Irish Government, Irish Tax and Customs, Statistics and Economic Research Branch, Op cit.
[16] BBC Northern Ireland, 'Crossing the border four times in 10 minutes', 16 August 2017.
[17] Centre for Cross Border Studies, 'Measuring Mobility in a Changing Island', May 2010.
[18] Government of Ireland, Central Statistics Office, 'Brexit: Ireland and the UK in numbers', December 2016
[19] Government of Ireland, Central Statistics Office, Ibid.

3. POTENTIAL IMPACTS OF A HARD BORDER

KEY FINDINGS

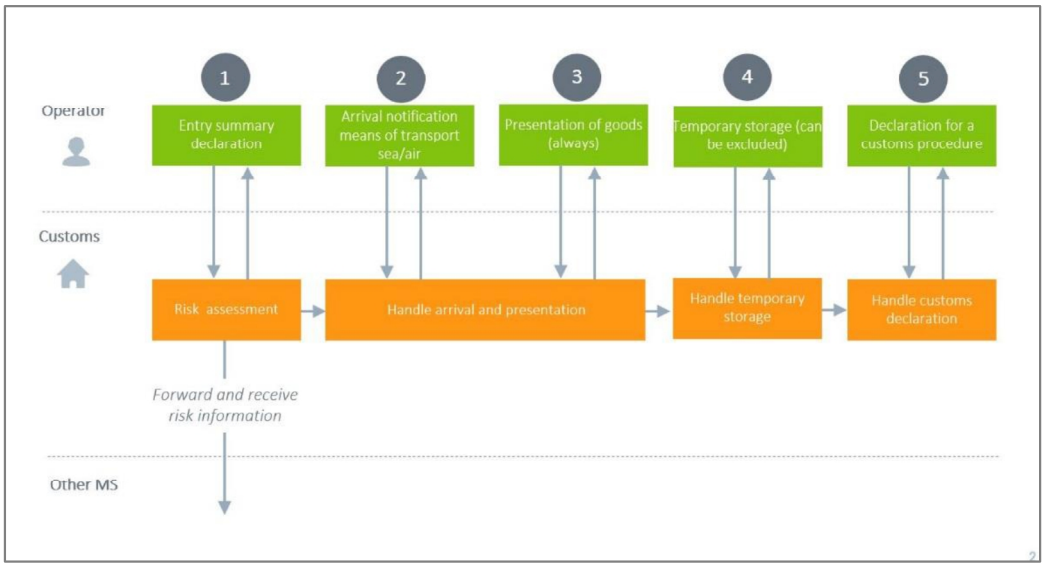
- Both inter-company and intra-company supply chains are highly dependent on a smooth border.
- Documentation and compliance requirements at a border can increase transaction costs by 2%-24% and the total cost of obtaining a certificate of origin could be more than €450 per consignment.
- Border controls can add between 30-60 minutes to the border crossing time of a truck and 10-20 minutes for a car.

3.1 Typical border processes

Customs processes prior to and at a border are generally governed by the Revised Kyoto Convention, an international agreement that came into force in 2006[20]. Process prior to and at the border for government agencies relating to issues such as phytosanitary control, quarantine, consumer protection and the environment are governed by national, customs union or international standards.

An overview of processes involved in importing are presented in Figure 1.

Figure 1: Overview of import process

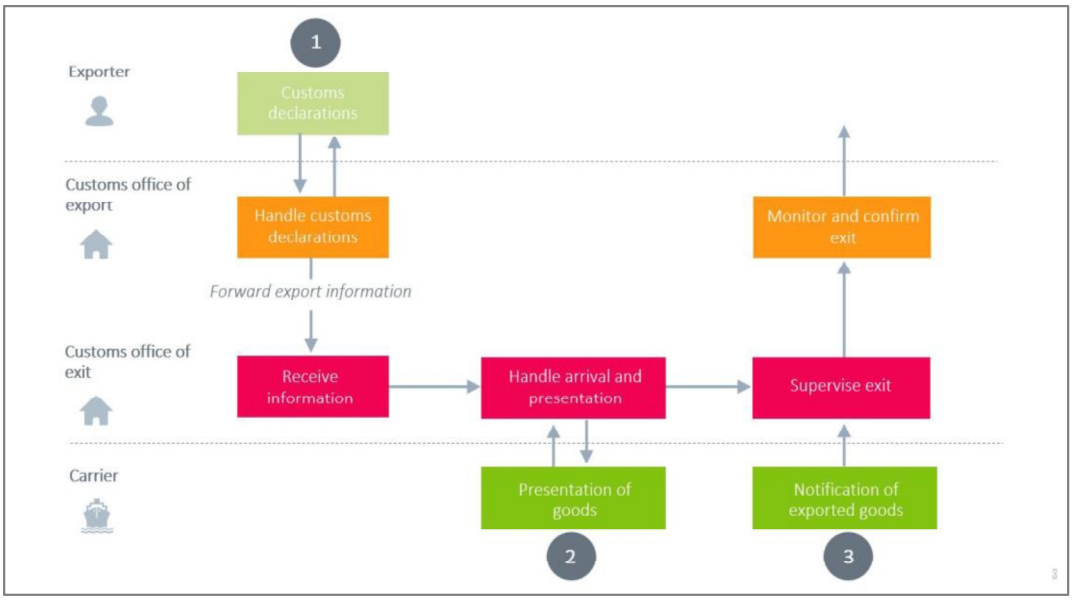


Source: KGH Border Services

[20] Revised Kyoto Convention, 1999.

For exporting, processes are generally simpler

Figure 2: Overview of export process



Source: KGH Border Services

3.2 Trade in goods and a 'harder' border

3.2.1Interconnected trade and industry

Both large businesses and SMEs often have highly interconnected supply chains covering the island of Ireland and often involving movements across the border throughout the manufacturing process, as well as sourcing and sales. In the course of production of Guinness, approximately 13,000 border crossings are made each year[21]. Bombardier, one of Northern Ireland's largest employers, engages more than 60 suppliers in Ireland[22].

SMEs are reliant on cross-border trade, with both sourcing of components and sales involving border crossings. SMEs also utilize labour from either side of the border[23].

The agricultural sector is also interconnected with processing often involving several border crossings. Examples given include: raw milk, which crosses the border both ways; and, the intra-company movement of milk and milk products across the border.[24]. In addition, there is movement of lambs from north to south and pigs from south to north across the border[25].

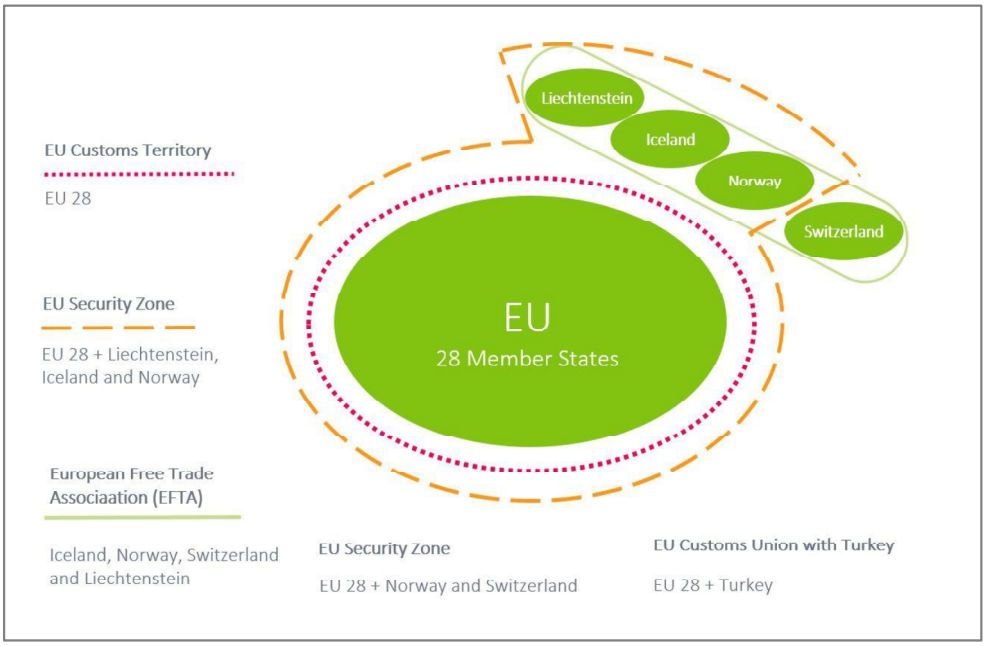
3.2.2 Impacts of a 'harder' border

The EU is a customs union with a common customs territory and a security zone. All these three circumstances are affected if a Member State leaves the Union. The customs territory

[21] The Economist, 'Why Brexit could mean a pricier pint of Guinness', 15 July 2017.
[22] Bombardier, 'Future Trends an Industry Perspective', June 2014 (accessible at https://enterprise-ireland.com/en/events/ourevents/technology-trends-in-engineering-and-manufacturing-24-june-2014/gavin-campbell-bombardier.pdf).
[23] InterTradeIreland, 'Working Paper: British Exit from the European Union', Case Studies, May 2017.
[24] UK Parliament, Commons Select Committee on Northern Ireland Affairs, written evidence submitted by Dairy UK for the Northern Ireland Affairs Committee's inquiry into the future of the land border with the Republic of Ireland, 2 November 2016.
[25] UK Parliament House of Lords, European Union Committee, 'Brexit: UK-Irish Relations', 12 December 2016.

should not be confused with the EU Single Market area and the EU security zone. These institutions have different purposes and roles.

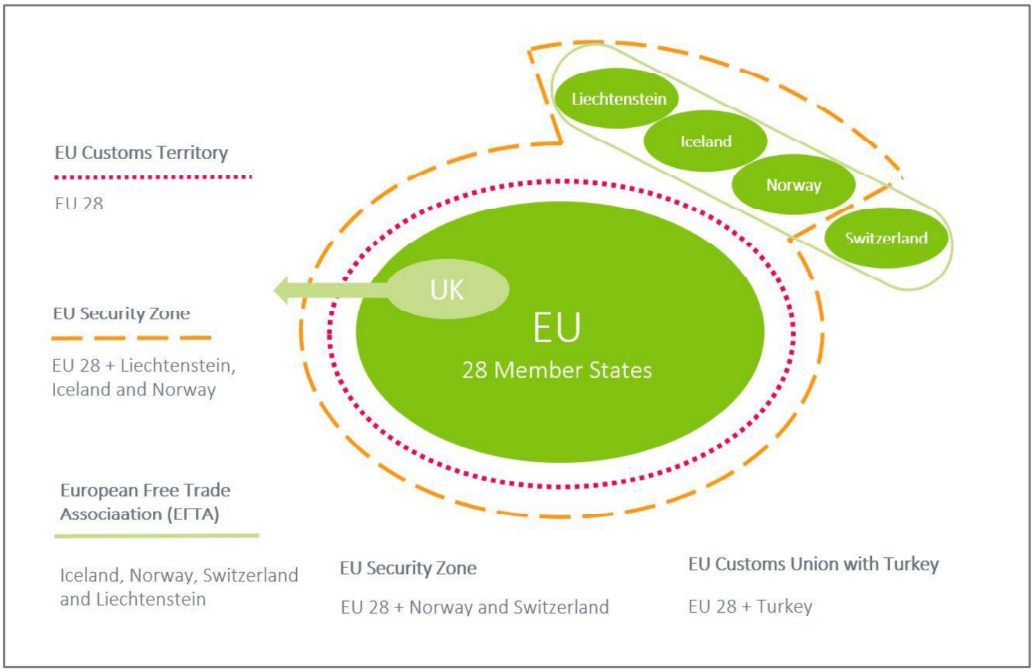
Figure 3: Pre-Brexit relationships



Source: Swedish National Board of Trade

The withdrawal of the UK from the EU will mean the introduction of some form of border controls.

Figure 4: Post-Brexit relationships



Source: Swedish National Board of Trade

The introduction of border controls along the border will impact a large number of companies that have never previously made an export and/or import declaration. There are a number

of studies that point to the time and cost impacts of border controls and compliance requirements, for example the need to obtain a certificate of origin for exporters.

The potential reduction in cross-border trade of a 'hard' UK exit from the EU with the implementation of WTO tariffs together with compliance and border procedures has been estimated at €430 million, or a reduction of 16% in the value of trade[26].

A 2013 study by the OCED found that "documentation and customs compliance requirements, lengthy administrative procedures and other delays can increase transaction costs an estimated 2 to 24% of the value of traded goods[27]." Regarding the impact of specific potential future customs compliance requirements, the total cost of acquiring a certificate or origin for exports from Northern Ireland has been estimated at more than €458[28] per consignment[29].

Time-sensitive goods, such as agri-food or even goods in just-in-time supply chains, have been found to be particularly sensitive to border delays, with each additional hour of border waiting time for businesses in the EU adding 0.8% to trade costs in relation to their traded value[30].

A study for the European Parliament found that if border controls were introduced between Schengen countries, HGVs would be subject to border wait times of between 30 and 60 minutes. The same study found that the value of time for freight waiting at border crossings is €50 per vehicle per hour[31].

A study of the USA's borders with Mexico and Canada found a relationship between waiting time at the borders and the number of trips taken. The study found a time elasticity value of -0.5%, so that if wait times increase, the number of trips will fall[32].

Car travel for business, commuting and personal reasons would also be impacted by the introduction of any border or identity controls. If border controls were introduced for Schengen countries, it has been estimated that an additional 10-20 minutes would be lost at border crossings at a value of time loss of €12 for commuters and €30 for business travellers[33].

[26] Lawless M and Studnicka Z, 'Potential Impact of WTO Tariffs on Cross-Border Trade', The Economic and Social Policy Research Institute for InterTradeIreland, June 2017.
[27] Moïse E and Le Bris F, 'Trade Costs: What Have We Learned? A Synthesis Report', OECD, Trade and Agricultural Directorate, 15 April 2013.
[28] GBP 400, GBP/EUR exchange rate based on European Central Bank, Euro foreign exchange reference rates, average for 2016.
[29] UK Parliament, Commons Select Committee on Northern Ireland Affairs, oral evidence by Stephen Kelly, Chief Executive, Manufacturing NI the Northern Ireland Affairs Committee's inquiry into the future of the land border with the Republic of Ireland, 22 February 2017.
[30] Hornok C, 'Is faster trade more trade? Evidence from EU enlargement', Centre for Economic Policy Research, July 2011.
[31] Breemersch T and Vanhove F, 'Impact of border controls within Schengen on the Single Market: Road transport sector case study', European Parliament, Policy Department A: Economic and Scientific Policy, 2016.
[32] Roberts B et al, 'Economic Impacts of Reducing Wait Times at U.S. Border Crossings', University of Southern California Homeland Security Center, 2013.
[33] Breemersch T and Vanhove F, Op cit.

4 SMART BORDERS

KEY FINDINGS

- Smart borders apply international standards, best practices and technologies to allow borders to operate as smoothly as possible.
- Smart borders are also heavily reliant on cross-border cooperation by border agencies – including data exchange – as well as cooperation between agencies within a country.
- By using technology, advanced information and other measures, smart borders also keep borders open by shifting traditional compliance processes to either before or after the border.

4.1 A solution that meets a range of political outcomes

Regardless of any form of agreement reached by the UK and the EU, the UK and Ireland – as the only European Single Market land border with the UK - will need to put in place some form of border and customs compliance procedures. These will also need to be compatible with broader future customs arrangements between the UK and the EU.

Both the European Council and the UK Government have expressed their support for 'imaginative and flexible solutions'[34][35]. The UK Government has also outlined its desire for a 'frictionless and seamless' border and for avoiding physical border infrastructure on either side of the border[36], which would also impact the Government of Ireland. The European Commission has stated that the onus to provide solutions rests with the United Kingdom[37].

Given the time taken to develop any form of customs compliance and border processes, it is important that the solution or solutions for managing the border are flexible enough to meet any future agreement between the UK and the EU.

Any solution for the border between Ireland and Northern Ireland should also be scalable and have the potential to be used as the basis of future customs arrangements between the UK and the EU.

4.2What is a smart border?

Smart borders involve utilising modern technology, risk management, domestic and international cooperation as well as international standards to create secure and low-friction borders.

Smart borders recognise that people and goods carry different risks and so separate these flows so they can be managed differently.

[34] Media Release, European Council, The President, 'European Council (Art. 50) guidelines for Brexit negotiations', 29 April 2017.
[35] UK Government, HM Treasury, 'Customs Bill: legislating for the UK's future customs, VAT and excise regimes', October 2017.
[36] UK Government, Position Paper, 'Northern Ireland and Ireland', August 2017.
[37] European Commission Task Force for the Preparation and Conduct of the Negotiations with the United Kingdom under Article 50 TEU, 'Guiding principles for the Dialogue on Ireland/Northern Ireland', 21 September 2017.

The concept of smart borders was first used in December 2001 in an agreement between the governments of the United States and Canada[38] and identified areas for development including biometric identifiers for passengers and harmonized clearance, joint facilities and customs data sharing for goods.

The EU announced its own smart borders program in 2013 focusing on the use of technology and biometric data to facilitate the movement of persons across the external Schengen borders, and included elements such as a registered traveller program[39]. The European Parliament adopted a legislative resolution on the Commission proposal for a regulation on 25 October 2017[40].

The United Nations Economic Commission for Europe's (UNECE) Trade Facilitation Implementation Guide[41], which is designed to assist in the implementation of the WTO's Trade Facilitation Agreement, includes the elements for trade facilitation that are required for the development of smart borders for trade, covering customs and border management and transport and logistics.

4.3International standards and best practices

There is a range of international standards and best practices governing the operation of secure and smooth borders for people and goods, many of which are relevant for the border between Ireland and Northern Ireland. Other standards and best practices also form part of the UNECE's Trade Facilitation Guide mentioned above.

At borders as a matter of course, the processing of goods (and vehicles and their drivers) and people should be separated to reduce congestion and ensure that the right measures are being applied to facilitate fast movement across the border.

4.3.1 Trusted Traders

Authorised Economic Operator (AEO) programmes (also known as trusted trader programmes) are based upon the World Customs Organization's Framework of Standards to Secure and Facilitate Global Trade (SAFE)[42].

Trusted trader programmes work on the principle that companies that are able to meet specific compliance and/or security standards in their day-to-day operations will receive benefits in their trade across borders, both for imports and exports. The types of benefits

[38] Governments of Canada and USA, US and Canada Smart Border Declaration (2001), available at http://www.legislationline.org/documents/id/7543, accessed 26 October 2017.
[39] Proposal for a regulation of the European Parliament and of the Council establishing an Entry/Exit System (EES) to register entry and exit data and refusal of entry data of third country nationals crossing the external borders of the Member States of the European Union and determining the conditions for access to the EES for law enforcement purposes and amending Regulation (EC) No 767/2008 and Regulation (EU) No 1077/2011 COM/2016/0194 final - 2016/0106 (COD) (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52016PC0194; see also European Commission, Migration and Home Affairs, Smart Borders (https://ec.europa.eu/home-affairs/what-we-do/policies/borders-and-visas/smart-borders_en, accessed 26 October 2017).
[40] European Parliament legislative resolution of 25 October 2017 on the proposal for a regulation of the European Parliament and of the Council establishing an Entry/Exit System (EES) to register entry and exit data and refusal of entry data of third country nationals crossing the external borders of the Member States of the European Union and determining the conditions for access to the EES for law enforcement purposes and amending Regulation (EC) No 767/2008 and Regulation (EU) No 1077/2011 (COM(2016)0194 – C8-0135/2016 – 2016/0106(COD)) (Ordinary legislative procedure: first reading) (http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2017-0411+0+DOC+XML+V0//EN; see also: European Parliament, Strengthening security checks at Europe's borders, media release, http://www.europarl.europa.eu/news/en/press-room/20171020IPR86543/strengthening-security-checks-at-europe-s-borders, accessed 26 October 2017.
[41] United Nations Economic Commission for Europe, Trade Facilitation Implementation Guide, http://tfig.unece.org/index.html, accessed 26 October 2017.
[42] World Customs Organization, Framework of Standards to Promote and Facilitate Global Trade (SAFE), June 2015.

generally include expedited clearance, including reduced documentary and physical checks, and benefits under Mutual Recognition Agreements (MRA) with other customs jurisdictions.

Both the UK and the Ireland have trusted trader programmes under the umbrella of the EU's Authorised Economic Operator programme, which has its current legal basis in Article 39 of the Union Customs Code (UCC)[43]. The EU programme has three sub-classifications: AEO Customs Simplifications; AEO Security and safety; and, AEO Customs simplifications/Security and safety[44].

The UK and Ireland AEO programmes are currently underutilised. The UK currently has 604 AEO companies (no separate figures for NI) under all three of the EU AEO sub-classifications. Ireland has 139 AEO companies under all three sub-classifications. By comparison, Germany has 6,000 AEOs in all classifications, France 1,453 and Italy 1,238[45].

Through MRAs with other customs jurisdictions, companies authorized as compliant in one customs jurisdiction can be recognized as AEO in a second customs jurisdiction with reciprocal benefits for AEO companies. The EU currently has MRAs with Norway, Switzerland, Japan, Andorra, the US and China[46].

4.3.2 Frequent cross-border travel

There are no internationally based standards or guidelines for countries to align with in the case where there is frequent cross-border travel. The frequent traveller programme between the US and Canada is covered in Section 4 'Smart Border Case Studies'.

4.3.3 Integrated border management

Integrated border management encompasses cooperation between border management agencies within a customs jurisdiction and between one customs jurisdiction and another[47], generally along a shared border.

In its 2010 Guidelines for Integrated Border Management in EC External Cooperation, the European Commission noted that "IBM [Integrated Border Management] works towards achieving the goal of having open, but controlled and secure borders, by enhancing the coordination and cooperation among all the relevant border authorities at national and international levels."[48]

Within a customs jurisdiction, integrated border management requires bringing together the range of agencies that are often represented at a border, including health, biosecurity, customs, immigration and other agencies. As in Finland, this can include having one or two agencies responsible for all or most of the border functions[49].This domestic coordination also includes data exchange between different agencies that supports integrated activities.

43 Regulation (EU) No 952/2013 of the European Parliament and of the Council of 9 October 2013 laying down the Union Customs Code (recast) (http://eur-lex.europa.eu/legal-ontent/EN/TXT/PDF/?uri=CELEX:32013R0952&rid=1

44 European Commission, Authorised Economic Operators Guidelines, Directorate-General Taxation and Customs Union, 11 March 2016.

45 European Commission AEO query page http://ec.europa.eu/taxation_customs/, accessed 13 October 2017.

46 European Commission, Taxation and Customs Union, https://ec.europa.eu/taxation_customs/general-information-customs/customs-security/authorised-economic-operator-aeo/authorised-economic-operator-aeo_en#mutual, accessed 18 October 2017.

47 Aniszewski S, 'Coordinated Border Management – a concept paper', World Customs Organization, WCO Research Paper No.2, June 2009.

48 European Commission, 'Guidelines for Integrated Border Management in EC External Cooperation', November 2010.

49 European Parliament, 'The role of border management in implementing trade policy goals', Directorate-General for External Policies, Study, 2017.

A fully integrated border between customs jurisdictions requires a legal and regulatory framework, harmonised procedures, exchange of data and information as well as joint infrastructure[50].

At the EU's external border, integrated border management is in place at the Sweden-Norway border.

4.3.4Keeping the border open

In order to free up the border, a number of measures can be taken to ensure that as much government agency activity as possible is moved away from the border. These measures can form part of, for example, trusted trader programs, or be applied to most imports and exports.

A key step is allowing the release of goods prior to clearance by customs and other agencies. Based on pre-arrival information (or a pre-declaration with the minimum information required) goods can be released and a full declaration made within a defined time period after release.

Based on an account system, duties can be paid on a periodic basis and controlled based on audits. This system of deferred duty payments (which can also apply to VAT) eliminates the need to determine the correct amount of duties at the border. A system of monetary guarantees or security underpins deferred duty payments (see Section 2.4).

If inspections or controls are required, these can be conducted away from the border. This can be done either at a specified location (e.g. a customs warehouse away from the border) or at the importers place of business. For exports, any controls can be undertaken at the exporters place of business.

4.3.5 Single Window

The World Customs Organization defines a single window as "A Single Window Environment is a cross border, 'intelligent', facility that allows parties involved in trade and transport to lodge standardized information, mainly electronic, with a single entry point to fulfil all import, export and transit related regulatory requirements"[51].

A single window allows businesses to electronically submit most or all of the standardized information required for importing and exporting through one portal. This greatly simplifies the process for importers and exporters who have often been required to communicate separately with different government agencies on imports and exports.

The most advanced single windows allow businesses to submit applications for those certificates, licenses and permits required for import and export as well as the submission of customs declarations. Single windows can also provide facilities for bank payment of duties and other fees.

The UK currently operates a National Maritime Single Window for the submission of pre-arrival data only[52]. Ireland does not operate a single window.

[50] European Commission, 'Guidelines for Integrated Border Management in EC External Cooperation', Op cit.
[51] World Customs Organization, Single Window Information Store, http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-window.aspx, accessed 20 October 2017.
[52] Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on reporting formalities for ships arriving in and/or departing from ports of the Member States and repealing Directive 2002/6/EC (http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32010L0065).

4.3.6 Gateway solution

The Gateway solution is a solution using existing infrastructure, like mobile networks, for Customs and Government related information messages to and from businesses involved in import and/or export. It was first tested by Swedish Customs for Authorized Economic Operators at the Sweden-Norway border in 2003—2005. It can also be used to follow vehicles in real time through GPS positioning.

4.3.7 Green Corridor

The Green Corridor is a solution to speed up supply chains through a fast track approach for AEOs and which re-uses export data as the basis for border processing and imports throughout the supply chain. It was tested between Sweden, Finland and Russia for a number of years.

4.4 Technology Solutions

There are a wide range of technology solutions that support modern smart borders. These can facilitate secure and fast movement across borders by supporting better risk management and reducing the amount of paperwork required:

- A fully electronic environment: requiring the electronic submission and receipt of documents and payments. This creates a more secure environment by reducing the amount of paper as well as the faster processing of goods and passengers at a border.
- ePassports: The use of ePassports with biometric capabilities can facilitate the faster movement of persons across borders. The international standard for ePassports is governed by the International Civil Aviation Organization[53].
- Automatic Number Plate Recognition (ANPR): ANPR allows the reading of number plates and the use of this information to link to customs pre-arrival information or a declaration for a truck arriving at a border, which can allow faster or even no processing at a border. It can also facilitate the movement of passenger vehicles through risk assessment if it is possible to access data on vehicles in other government databases.
- Enhanced driver's licenses: driver's licenses or other personal identification cards with biometric or other identifying data. This facilitates fast identification of people at the border through quick scanning and can be used instead of a passport.
- Smartphone apps: Information for goods and passengers can be exchanged through smartphone apps. This can include the provision of minimum information from driver's approaching a border and the receipt of information (e.g. a barcode) by drivers to facilitate passing the border.
- Barcode scanning: To facilitate the movement of goods across a border, the provision of a barcode by customs or other border agencies can allow documentation to be scanned and released quickly on arrival.
- SmartGates: The use of smart gates or fast-scanning or machine reading technologies to facilitate the fast movement of persons through the border and to support risk management.
- Non-intrusive inspection technologies: Where controls on goods or vehicles are required, the use of scanners and other non-intrusive technologies for inspections prior to any requirement to open – or stop – a vehicle.

[53] International Civil Aviation Organization, Machine Readable Travel Documents, https://www.icao.int/publications/pages/publication.aspx?docnum=9303, accessed 26 October 2017.

- RFID technologies: The use of RFID associated with goods and/or enhanced driver's licenses or other forms of identification means that scanning can take place within a limited area, reducing the need for people to leave vehicles.

5.'SMART BORDER' CASE STUDIES

KEY FINDINGS

- There are a range of different approaches to the implementation of smart borders all of which create a low-friction border environment.
- Smart borders are reliant on a strong framework of agreements between countries and deep cooperation.
- New technologies are opening up new possibilities for speeding up the border process, while maintaining border security and integrity.

5.1 Sweden – Norway

5.1.1 Legal framework

As a member of the European Economic Area (EEA) and the Schengen Agreement, Norway participates in the four EU freedoms, but is not a member of the EU Customs Union. As such, Sweden's border with Norway is the EU's external customs border with requirements for customs controls at the border.

This means that Norway's standards for most goods mirror those of the EU, allowing the movement of goods with minimum compliance controls. As the EEA agreement excludes the EU Common Agricultural Policy and Common Fisheries Policy, Norway applies quotas, tariffs and other controls for some agricultural and fisheries imports from the EU[54].

Formal cooperation on customs matters between Norway and Sweden dates from the Helsinki Treaty of 1962[55]. An earlier convention established the right of Nordic citizens, including those of Sweden and Norway, to travel between Nordic countries without a passport[56] (similar to the CTA).

As both Sweden and Norway are parties to the Schengen Agreement, non-EU and Norwegian citizens are not normally required to present for passport control, although identity controls have been stepped up from time-to-time, including for EU and Norwegian citizens[57].

On Sweden's accession to the EU in 1995, an agreement was signed between the European Community and the Kingdom of Norway on customs cooperation. This agreement allowed Sweden and Norway to reach administrative arrangements on customs cooperation[58].

[54] Details on current tariffs available at http://ec.europa.eu/trade/policy/countries-and-regions/countries/norway/
[55].The Helsinki Treaty 1962, accessible at http://www.norden.org/en/om-samarbejdet-1/nordic-agreements/treaties-and-agreements/basic-agreement/the-helsinki-treaty
[56] The Nordic Passport Convention, 1957, updated 1973, 1979, 2000, accessible at https://www.norden.org/en/om-samarbejdet-1/nordic-agreements/treaties-and-agreements/passport-issues-citizenship-and-national-registration/the-nordic-passport-convention
[57] Government of Norway, 'Introduction of border controls', press release, 26 November 2015.
[58] Agreement on customs cooperation between the European Community and the Kingdom of Norway, 1997, accessible at http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:21997A0423(02)&from=EN

5.1.2 Border trade and cross border traffic

The border between Norway and Sweden is approximately 1,600 kilometres long with more than 80 crossings. Only fourteen of these crossings have customs offices.
The value of trade exports between Sweden and Norway is considerably higher than between Ireland and Northern Ireland (see Table 2).

Table 7: (2016) Exports in goods between Sweden and Norway

	Value (€ mns[a])
Sweden to Norway[59]	13,013
Norway to Sweden[60]	5,521

Notes:
a. SEK/EUR and NOR/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2016

Table 8: (2012) Estimated monthly HGV at five major Sweden-Norway border crossings

	Number[61]
Number of HGV crossings[a]	118,000

Notes:
a. This figure is based on an annual average daily traffic of 3,890 HGVs at five different road traffic crossings only and so under represents total traffic. Converted into a monthly figure for comparison purposes.

The busiest border crossing is at Svinesund with an estimated monthly volume of 66,000 heavy goods vehicles.

Table 9: (2012) Estimated monthly car crossings a busiest border crossing point

	Number[62]
Number of vehicles	425,000

Notes:
a. This figure is based on an annual average daily traffic of 14,000 vehicles at Svinesund. Svinesund represents 56% of HGV traffic and if applied to car crossings, total average daily traffic across the border would be more than 22,000 vehicles per day or more than 667,000 per month. Converted into a monthly figure for comparison purposes.

Car traffic is driven mainly by cross-border shopping from Norway to Sweden and day visits with an estimated 9.5 million individual visits from Norway to Sweden being made in 2011[63] (only 7,069 trips for the same reason were made in the opposite direction). Approximately 27,000 Swedes commuted to Norway for work in 2012 and 864 Norwegians commuted to Sweden for work in the same year[64].

[59] Statistics Sweden, 'Foreign Trade – Exports and imports of goods January–December 2016', January-December 2016..
[60] Statistics Norway, 'External Trade in Goods', January 2017.
[61] Swedish Transport Administration, 'Goods Transport in Värmland', December 2015 (Swedish only).
[62] Svinesund Committee, World's best neighbor – Facts about the border region Norway and Western Götaland, September 2013 (Swedish only).
[63] HUI Research for the Swedish Trade Federation, Swedish Agency for Economic and Regional Growth, Region Värmland, Western Värmland Region and the Western Sweden Tourist Council, 'Norwegian border trade and tourism', 2011 (Swedish only).
[64] Western Götaland Region, 'Statistical database border region statistics Norway Sweden', 2012 (Swedish only).

5.1.3 Border Operations

The Sweden—Norway Customs model is considered the most advanced customs solutions in the world, as it is the only model that uses all the basic modern components of the international standards from the World Customs Organization. It is also fully compatible with the World Trade Organization Trade Facilitation Agreement. In addition, it has been operationally tested for several years and it is, from a technical customs perspective, already working on an EU border.

The legal framework for border operations is given expression in the Swedish and Norwegian customs regulations. The regulations mirror each other in respect of the border crossings between Norway and Sweden.

The regulations allow for[6566]:

- The creation of a 15 kilometre control zone on either side of the border where customs controls can take place;
- That controls can be carried out by the customs authorities of either country on either country's territory within the control zone in accordance with their own customs regulations (this includes EU customs regulations for Sweden);
- That customs controls can be undertaken on the other country's behalf;
- The goods to be declared must pass through a customs location;
- The sharing of information between Norwegian and Swedish customs.

Both Norway and Sweden have AEO programmes with Sweden's AEO programme having 289 companies under the three EU classifications[67]. Norway has only 27 participating companies in its AEO programme[68]. The EU and Sweden have an MRA.

In addition, transport permits issued by Swedish and Norwegian customs allow goods to be transported over unmanned border crossings based on a number of conditions, including the submission of electronic-only declarations.

With only fourteen manned customs posts along the border, regulation on shared controls allows border posts to be manned by only one country's customs authority (see figure 3 below).

Both Sweden and Norway allow for customs to represent most other relevant agencies at the border (e.g. food health and agriculture agencies) and operate national single windows for submission of customs and other agency information requirements (e.g. permits).

[65] Kingdom of Norway, 'Regulations to the Act on Customs Duties and Movement of Goods (Customs Regulations)', accessible at https://www.toll.no/en/services/regulations/law-and-regulations/the-act-on-customs-duties-and-movement-of-goods/

[66] Government of Sweden, 'Customs regulations (TFS 2005: 2) on cross-border cooperation with Norway' and 'Regulation (2002: 1054) on border co-operation with Norway' accessible at https://www.tullverket.se/sv/omoss/forfattningaritullverket/tullkodexmmforfattningsstod/granstullsamarbete.4.792224361590183a4d3a46.html (Swedish only).

[67].European Commission, Taxation and Customs Union, https://ec.europa.eu/taxation_customs/general-information-customs/customs-security/authorised-economic-operator-aeo/authorised-economic-operator-aeo_en#mutual, accessed 19 October 2017.

[68] Norway Customs Authorised Economic Operators, accessible at https://www.toll.no/en/corporate/authorised-economic-operators/, accessed 19 October 2017.

Figure 5: Border Posts – Sweden and Norway



Source: Swedish Customs

Norway and Sweden require the provision of a summary declaration (i.e. pre-arrival information) at least one hour prior to arrival at the border. Most goods traffic travelling across the border are cleared, on average, within 3-9 minutes, with longer waiting times at peak periods. These regimes release prior to clearance.

In both Norway and Sweden businesses can apply to participate in deferred duty payment regimes and the payment of VAT can also be incorporated into a company's VAT account for later payment. To facilitate this process a full declaration must be made within a defined period of time after the goods have been released (in Norway this is ten days).

A small percentage of goods are selected for documentary control or physical control by customs[69]. The approach to controls taken by Swedish and Norwegian customs is heavily risk-based, relying on risk-management technology to identify those vehicles to undergo documentary or physical checks.

In order to facilitate this fast movement when physical controls (i.e. checking of the goods) does take place, vehicles selected for physical controls pass through a scanner first and only undergo further physical controls if necessary.

Heavy investments have been made in technology to facilitate the shared operations. Pre-arrival information and declarations are submitted electronically (with no supporting documents) and are then visible to both customs agencies to facilitate clearance by the country's operating a particular border crossing.

In 2011, Norway commenced the use of automatic number plate recognition (ANPR) cameras along border crossings that do not have either Norwegian or Swedish customs posts. These are used to identify suspicious vehicles and have been used to detect customs violations[70]. The ANPR system is linked to a national motor registry database enabling checks on vehicles and Norwegian customs are reported as stating that they plan to integrate ANPR technology

[69] In 2016, 4% of total import declarations into Norway and 13% of total declarations into Sweden were subject to documentary or documentary and physical controls. Source: Norway Customs accessible at https://www.toll.no/no/om-tolletaten/om-oss/nokkeltal/ (Norwegian only); Sweden Customs, Swedish Customs annual report, 2016 (Swedish only).

[70] Euroactiv.com, News article, https://www.euractiv.com/section/uk-europe/news/is-the-norway-sweden-border-a-model-for-uk-ireland/, 17 August 2017.

into customs systems allowing goods vehicles to pass through the border without stopping if they have submitted a declaration and been cleared[71].

5.2 Canada — United States

5.2.1 Legal Framework

Both Canada and the USA are members of the North American Free Trade Area (NAFTA) and have the world's largest bi-lateral trade relationship by value[72]. The US and Canada are not part of a customs union and so goods that pass the US-Canada border are required to undergo customs procedures. There is visa free travel for US and Canadian citizens travelling between the two countries, although a passport is required.

While NAFTA addresses issues around technical barriers to trade, it does not have provisions relating specifically to trade facilitation[73]. Trade facilitation measures, such as measures to speed the movement of goods, are covered in separate agreements as are measures to do with the movement of persons.

Post 2011, border management became security focussed and recent agreements have also focused on trade facilitation measures[74]. Amongst the key agreements governing Canada-US border arrangements are[75]:

- 2010 Framework for Co-operative Border Management
- 2011 Beyond the Border: A Shared Vision for Perimeter Security and Economic Competitiveness
- 2011 Action Plan on Perimeter Security and Economic Competitiveness
- 2012 Agreement between the Government of Canada and the Government of the United States of America for the Sharing of Visa and Immigration Information (IIST) signed in December 2012 – data sharing on people
- 2015 Agreement on Land, Rail, Marine, and Air Preclearance

5.2.2 Border trade and cross border traffic

The US-Canada border is 8,891 kilometres long with 120 land ports of entry between the two countries.

Table 10: (2016) Exports in goods between Canada and the USA

	Value (€ mns[a])
Canada to US[76]	269,984
US to Canada	289,248

Notes:

a. CAD/EUR and USD/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2016

[71] BBC, News article, 'Frictionless borders: learning from Norway', 29 September 2017.
[72] United States Government, US Embassy Canada, FACT SHEET: United States-Canada Relationship, https://ca.usembassy.gov/fact-sheet-united-states-canada-relationship/, accessed 20 October 2017.
[73] UNCTAD, 'Trade Facilitation in Regional Trade Agreements', 2011.
[74] Moens A and Gabler N, 'Measuring the Costs of the Canada-US Border' Fraser Institute Studies in Canada US Relations, August 2012.
[75] Government of Canada, Public Safety Canada, 2015 Beyond the Border Implementation Report, September 2016
[76] Statistics Canada, Canada's merchandise trade with the United States by state, 19 June 2017.

The economies of the US and Canada are highly integrated, with intra-firm trade across the US-Canada border accounting for 32% of the value of traded goods[77].

It is estimated that more than five million trucks cross the US-Canada border each year[78]. Eleven major crossings in the Ontario (CN) – Michigan (US) – New York (US) corridor have an average of more than 570,000 two-way truck crossings each month[79].

Table 11: (2016) Average monthly two-way truck crossings – selected border crossings

	Number[80]
Ambassador Bridge, DetIEt/Windsor	195,922
Blue Water Bridge, Port Huron/Sarnia	128,079
Peace Bridge, Buffalo/Fort Erie	103,728
Lewiston-Queenston Bridge	56,724

Table 12: (2014) Estimated monthly number of car crossings US-Canada border

	Number
Canada to US[81]	2.6 million[a]
US to Canada[82]	3.1 million[b]

Notes:
a. Excludes crossings into Alaska
b. This figure is based on an estimated 2013 volume of 31 million passenger vehicle crossings from the Public Border Operators association figure of 29.6 million vehicles crossing eleven border crossings and applying the estimated share of these crossings for truck traffic (77%[83]) to passenger vehicles.

The Ambassador Bridge between Ontario and Michigan carries a monthly average of 390 thousand vehicles.

It is estimated that 64 million people crossed the US-Canada border in 2015 [84] (approximately 5.3 million per month). There is no labour mobility between the US and Canada and people crossing the border to work must obtain a visa.

[77].Eastern Border Transport Coalition, The Importance of Efficient Canada/U.S. Border Crossings and Recommendations for Action, 2015.
[78].Public Safety Canada and US Department of Homeland Security, Perimeter Security and Economic Competitiveness, Considerations for United States – Canada Border Traffic Disruption Management, 2012.
[79].Public Border Operators Association, Traffic Data, http://www.publicborderoperators.org/index.php/traffic, accessed on 24 October 2014.
[80] Eastern Border Transport Coalition, Ibid.
[81] US Bureau of Transport Statistics, Incoming Personal Vehicle Crossings, U.S.-Canadian Border: 2009-2014, https://www.rita.dot.gov/bts/sites/rita.dot.gov.bts/files/publications/state_transportation_statistics/state_transportation_statistics_2015/chapter-4/table4_9, accessed 24 October 2017.
[82] Eastern Border Transport Coalition, Op cit.
[83] Eastern Border Transport Coalition, Ibid.
[84] Government of Canada, Beyond the Border Implementation Report, 2015.

5.2.3 Border Operations

Both the US and Canada make extensive use of technology for the advanced provision of information for risk management. At the border, barcode scanning of customs documentation, automatic number plate recognition, RFID technology and biometric data in cards for approved drivers are used for risk management purposes and to speed release of vehicles.

US and Canadian measures to expedite both the movement of goods and people focus on both individual country and shared programmes that require pre-approval and compliance for importers, carriers and drivers.

Thirty-nine land border ports of entry representing 95% of all trade are equipped with RFID reader technology[85].

The Free and Secure Trade Program (FAST)[86] is a joint program designed to expedite the clearance of low risk commercial goods. To be eligible, the manufacturer, importer, exporter and carrier must be accredited under the US Customs and Border Protection's (US CBP) Customs-Trade Partnership Against Terrorism (C-TPAT) and the Canadian Border Services Agency's (CBSA) Partners in Protection programme. These programmes are each country's respective trusted trader/AEO program.

Dedicated FAST lanes are at four border locations (Windsor, ON / Detroit, MI; Sarnia, ON / Port Huron, MI; Fort Erie, ON / Buffalo, NY; Pacific Highway, BC / Blaine, WA). Based on pre-arrival information, the carrier is sent a barcode and on arrival the driver presents their personal FAST card and the barcode for scanning.

An Empirical Investigation of the Pacific Crossing (2007) found that participants in the FAST program experienced time benefits of up to 81% (15.6 minutes versus 81 minutes in a regular lane)[87].

The Canada Customs Self Assessment programme is for low risk goods and open for importers and carriers. Drivers must be approved under the FAST program or Canada's Commercial Driver Registration Program (CDRP) and are able to use the FAST lane at border crossings.

In Canada, businesses can apply to be members of the Canadian Release on Minimum Documentation programme that allows release and deferred payment based on a summary pre-declaration and with the provision of a security. Canada is currently moving to an account management system that will require a mandatory importer security and deferred payment for all commercial importers.

Both Canada and the US operate eManifest systems for compulsory pre-arrival information from carriers. Information is submitted no less than one hour prior to arrival at a land border, or thirty minutes in the case of FAST members. Both in Canada and the US, the eManifest systems generate a barcode that can be used at the border.

[85] US Department of Homeland Security, Enhanced Driver's Licenses, What are they?, https://www.dhs.gov/enhanced-drivers-licenses-what-are-they, accessed 25 October 2017
[86] Canadian Border Services Agency, 'Free and Secure Trade', accessible at http://www.cbsa-asfc.gc.ca/prog/fast-expres/menu-eng.html, accessed 20 October 2017
[87] Gillan D and Gados A, University of British Columbia, Centre for Transportation Studies, An Empirical Investigation of the Pacific Crossing, 2007

Canada and the US also operate systems for pre-arrival commercial information. In the US, the system is known as the US Pre-Arrival Processing System (PAPS) and in Canada as the Pre-Arrival Review System (PARS). Information is submitted to US CBP and Canadian CBSA respectively and the customs broker, importer or carrier attaches a barcode to the commercial documentation for scanning at the border.

On arrival at the US-Canada border, ANPR technology is used to identify the truck, driver and information on the cargo. PARS/PAPS documentation and/or eManifest documentation is then scanned and information on release or further inspection is provided to the border staff.

Both the Canadian and US authorities provide on-line real-time information on waiting times at major border crossing points[88]. Data collected in 2013 showed average waiting times at three major crossings[89] for trucks into the US at between 18.9 and 27.1 minutes and for Canada between 16.8 and 17.6 minutes[90].

Canada is currently in the process of implementing a national single window. The US national single window is in development.

The USA and Canada have implemented the NEXUS program that allows for expedited processing of pre-approved travellers[91]. In 2015, approximately 6.6 million journeys across the border, or 10% of total journeys, were made by NEXUS programme participants[92]. Participants in the NEXUS programme must be pre-approved and are issued with an RFID enabled card containing biometric data. Participants in the programme have access to dedicated NEXUS lanes at 21 land border crossings. In 2015, average waiting times in dedicated NEXUS lanes was 25 seconds versus 58 seconds for general lanes[93].

Several Canadian provinces and US states also make use of enhanced driver's licenses that are RFID enabled and contain biometric data[94]. Using ANPR technology on approaching vehicles, information on the vehicle and registered owner are brought up and matched against the RFID enabled information on the card. These cards can be used as an alternative to passports for entry into Canada and the US.

For travel between the US and Canada on a passport, both countries make use of bio-metric passports containing information on the passport holder.

5.3 Australia — New Zealand

Australia and New Zealand have a long shared economic and cultural relationship and, whilst there are no land borders, each makes extensive use of technology to support the movement of persons and commercial goods.

[88].For Canada at http://www.cbsa-asfc.gc.ca/bwt-taf/menu-eng.html and the US at https://bwt.cbp.gov/index.html?com=0&pas=1&ped=1&plist=0708,3004,0901,0115,0712,0209,3800,0212,0106,3604,0104,3023,0109,0704,0211,0701,3401,3802,3803,3009,3310

[89] Ambassador Bridge and Blue Water Bridge (Ontario, Canada, and Michigan, USA) and Peace Bridge (Ontario, Canada, and New York, USA).

[90] Ginerich K and Maoh H, University of Windsor Cross Border Institute, Big Data Analysis to Measure Delays of Canadian Domestic and Cross-Border Truck Trips, July 2016.

[91] Canadian Border Services agency, website http://www.cbsa-asfc.gc.ca/prog/nexus/menu-eng.html, accessed 16 October 2017.

[92] Government of Canada, Beyond the border implementation report, 2015.

[93] Government of Canada, Beyond the border implementation report, 2015.

[94] Canada: Quebec, Manitoba, Ontario and British Columbia; USA: Michigan, Minnesota, New York, Vermont, and Washington.

5.3.1 Legal Framework

The major agreement currently underpinning economic and commercial relationships between Australia and New Zealand is the Australia-New Zealand Closer Economic Relations Trade Agreement, also known as the CER. The CER allows for tariff and quota free trade and mutual recognition or harmonization of standards[95].

Australia and New Zealand do not form a customs union. Cooperation on customs matters forms part of the CER, which requires ongoing efforts to simplify trade and supporting agreements on harmonizing customs policies and procedures[96].

Under the Trans Tasman Travel Arrangement (1973), Australians and New Zealanders are permitted to reside indefinitely in each country with visa-free entry[97].

5.3.2 Border trade and cross border traffic

All trade in goods is either by aircraft or ship across the Tasman Sea.

Table 13: (2016) Exports in goods between Australia and New Zealand

	Value (€ mns[a])
Australia to New Zealand[98]	5,851
New Zealand to Australia[99]	5,233

Notes:
a. AUD/EUR and NZD/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2016

Table 14: (2009) Export cargo ship arrivals Australia and New Zealand

	Number[a] [100]
Australia to New Zealand	1,248
New Zealand to Australia	1,508

Notes:
a. These numbers based on an extrapolation of a representative seven-day week taken in 2009 for ships involved in trans-Tasman trade

Given the distance between Australia and New Zealand, there is no commuter traffic and the movement of persons is associated with tourism and business.

[95] Australian Government, Department of Foreign Affairs and Trade, Australia-New Zealand Closer Economic Relations Agreement, http://dfat.gov.au/trade/agreements/anzcerta/Pages/australia-new-zealand-closer-economic-relations-trade-agreement.aspx, accessed 25 October 2017.
[96] Commonwealth of Australia, Department of Foreign Affairs and Trade, Australia-New Zealand Closer Economic Relations Agreement, Ibid.
[97] Parliament of Australia, Parliamentary Library, New Zealanders in Australia: a quick guide, May 2014.
[98] Australian Government, Department of Foreign Affairs and Trade, New Zealand Country Brief, http://dfat.gov.au/geo/new-zealand/Pages/new-zealand-country-brief.aspx, accessed 25 October 2017
[99].Government of New Zealand, New Zealand Foreign Affairs and Trade, Australia, https://www.mfat.govt.nz/en/countries-and-regions/australia/, accessed on 25 October 2017.
[100] Australian Customs and Border Protection Service and New Zealand Customs Service, Trans-Tasman Time Release Study, October 2010.

Table 15: (2016) Estimated movements between Australia and New Zealand

	Number[a] (mns)
Australia to New Zealand[101]	1.4
New Zealand to Australia[102]	1.3

Notes:
a. Excludes migration

5.3.3 Border Operations

Trade facilitation measures between Australia and New Zealand have focused on having similar standards and are based on the principle that goods sold in one country should be able to be made available in the other. The absence of tariffs also facilitates the movement of goods.

Both the above factors and the fact that a majority of trans-Tasman trade is by sea[103] means that clearance times are short. For shipments by sea, goods are usually released and cleared prior to arrival at the port of entry[104]. In New Zealand, 47% of arriving air cargo is released prior to arrival and for Australia the equivalent figure is 41%[105].

Both Australia and New Zealand now have a requirement for pre-arrival and pre-departure information and are implementing national single windows. As part of each country's trusted trader programs, they are also examining the introduction of deferred duty payments.

Both Australia and New Zealand have AEO programs and have signed a Mutual Recognition Agreement extending the benefits of each country's program to members of the other country's AEO program.

New Zealand and Australia have focused heavily on facilitating the movement of persons and both use facial recognition technology to facilitate immigration clearances for people with ePassports[106] from approved countries[107]. In Australia, 88% of passport controls are processed within 30 minutes[108] and in New Zealand 95% of incoming passengers are processed within 45 minutes[109].

[101] Government of New Zealand, Statistics New Zealand, International Visitor Arrivals.
to New Zealand: December 2016, February 2017.
[102] Government of Australia, Bureau of Statistics, Overseas Arrivals and Departures, Australia December 2016, March 2017.
[103]. Australian Customs and Border Protection Service and New Zealand Customs Service, Op cit.
[104]. Australian Customs and Border Protection Service and New Zealand Customs Service, Ibid.
[105]. Australian Customs and Border Protection Service and New Zealand Customs Service, Ibid.
[106] Australian Government, Department of Immigration and Border Protection, https://www.border.gov.au/Trav, accessed 25 October 2017.
[107] Government of New Zealand, Immigration New Zealand, https://www.immigration.govt.nz/about-us/policy-and-law/identity-information-management/how-biometric-information-is-used, and Australian Government, Department of Immigration and Border Protection, https://www.border.gov.au/Trav, accessed 25 October 2017.
[108] Australian Government, Department of Immigration and Border Protection, Annual Report 2015-2016, 2016.
[109] .Government of New Zealand, New Zealand Customs, Annual Report 2016, 2016.

6. PROPOSED TECHNICAL SOLUTION FOR THE IRISH BORDER – SMART BORDER 2.0

KEY FINDINGS

- Smart Border 2.0 that keeps the border open for free movement under the CTA using free movement lanes, enhanced licenses and collaboration between jurisdictions
- Smart Border 2.0 that benefits both governments and traders through the innovative implementation of international standards, best practices and new technologies

6.1 Focus on an open border

Solutions for the movement of people and goods must focus on maintaining a border that is as open as possible. It should allow people that are currently able to move freely under the CTA to continue to enjoy passport free travel across the border. In the case of goods, where importers and exporters are known to the authorities, any border formalities should be as limited as possible and controls undertaken away from the border.

In order to achieve this goal, border processes will need to take advantage of the latest technologies and implement world's best practice at the border, whilst maintaining the border's integrity from a trade and security perspective.

6.2 Free movement of persons

In order to maintain the free movement of persons, there will need to be a focus on allowing those that are permitted to utilise the CTA to continue to do so, whilst ensuring that those crossing the border that require passport or other checks are appropriately controlled.

This balance can be achieved through existing controls complemented by the use of technology. People free to travel under the CTA are already known and can move freely. Those that require a passport, or where there is suspicious activity, can undergo controls focused on the locations where there is the greatest volume of traffic. This utilises a basic 'risk management' approach where people that are 'known' have no or reduced checks and which targets those that are not 'known' and may present a risk.

These approaches are underpinned by creating an 'electronic border', with laws and systems able to support the exchange of information between agencies and between jurisdictions.

6.2.1 Free movement lanes

Given that most road traffic is at a limited number of crossings (see General Information section), controls required for non-CTA travellers can be established at these crossings. If people require a passport to enter or leave the island of Ireland, they will be required to present themselves at one of these crossings. If not, they will be considered to have entered illegally.

People that are free to travel across the border under the CTA can cross at any point along the border. If travelling through one of the major crossings, special lanes can be established for people travelling under the CTA supported by the technologies outlined below.

6.2.2 Enhanced driver's licenses or permits

In line with the other best practices in facilitating the movement of people, the progressive introduction of enhanced driver's licenses or permits for residents of Ireland and/or Northern Ireland should be considered.

These enhanced licenses can either contain basic data that identifies the holder together with an RFID capability or simply have an RFID capability that identifies the holder as a resident and holder of an Irish, Northern Ireland or Great Britain driver's license and able to cross the border under the CTA.

6.2.3 Use of RFID and ANPR

Enhanced licenses can be complimented with the use of RFID technology and ANPR. If, based on any risk management parameters, a driver is stopped at one of the control points, drivers can be identified through the use of an enhanced driver's license.

As an additional measure to support risk management, ANPR can be used at unmanned border crossings to undertake automatic checks – without stopping - to identify vehicles and passengers that should present at a manned border crossing, either on the basis that vehicles are registered either in Northern Ireland or Ireland or that vehicles have not come to the attention of another authority within a jurisdiction. ANPR at unmanned border crossings would also allow the identification of commercial vehicles required to present themselves at manned border crossings.

6.2.4 Cooperative approach

The above approaches require close collaboration both within and between Ireland and the UK.

There may be a requirement to create a legal basis for the exchange of information between agencies within jurisdictions. A legal basis would also be required for the exchange of data on holders of licenses and/or vehicle registrations between the UK and Ireland. A legal basis for the exchange of information associated with high-risk individuals for immigration or other purposes both within and between jurisdictions can also be provided that would enhance risk management practices at the border.

Actions can be further streamlined by having passport controls only being undertaken by the jurisdiction being entered. Any checks at the border on people covered under the CTA would also be carried out at the jurisdiction being entered.

6.2.5 Frequent traveller program

For people that travel frequently between Northern Ireland and Ireland that are not covered by the CTA, a frequent traveller program (such as NEXUS between the US and Canada) can be implemented, potentially in conjunction with a commercial traveller program (see Section 4.3)

6.3 The Smart Border 2.0

6.3.1 Background

This report proposes the implementation of a new border solution that serves both sides of the Ireland-Northern Ireland border with maximum predictability, speed and security, with a minimum burden and cost to trade.

The elements that need to be covered from a customs perspective include:

- Security information exchange (if included in negotiations);
- Risk assessment;
- Arrival notification;
- Presentation of goods;
- Identification by the border of goods and people;
- Customs declaration for export and import (and other Customs procedures);
- Monitor import/export including inspection possibilities;
- Post-border activities.

By introducing customs and government border procedures in an innovative and constructive way, there are also benefits for governments and society, including from a safety and security perspective. Instead of looking at Brexit as primarily as a task of minimizing the damage to trade and the movement of people, it could be seen as an opportunity to re-design the border concept and to operationally test a new model on the NI-Ireland border that also conceptually - with modifications - could be used also on the other borders to between EU and UK and potentially as a best practice for other EU external borders.

A solution such as this is a Smart Border solution, with a conceptually re-designed border based on a combination of:

- International standards;
- Existing Customs models;
- Operational best practice examples from other parts of the world where these examples are upgraded and adjusted to fit the EU-UK environment and circumstances in a Smart Border 2.0 model.

This report demonstrates that if the re-instatement of a border is handled in the same way as present external EU borders, it will have severe impact on EU-UK trade due to the volume of goods and people passing the border and due to the lack of a proper infrastructure for border formalities. It is the combination of these two parameters that makes the EU-UK border especially challenging. This is particularly the case when taking into account that the cross border trade between EU and UK in a post-Brexit environment It is easy to see how this can create problems and challenges for existing and future trade between EU and UK.

6.3.2 The proposed solution

Cross border trade requires predictability, speed, low cost and increased service from the Governments.

The new solution for the Ireland-Northern Ireland border should, in particular:

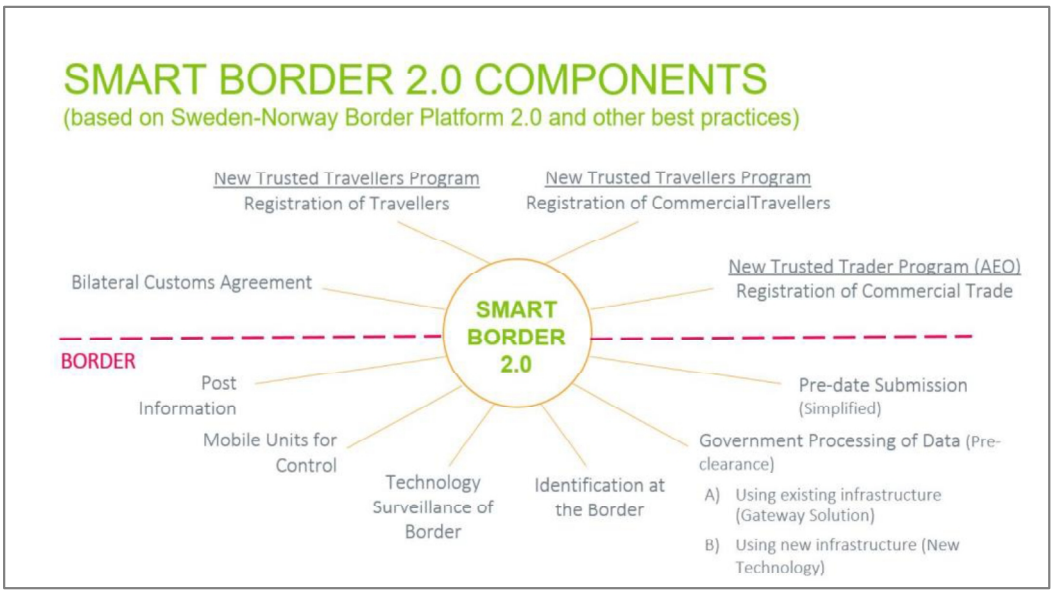
- Meet the requirements of the UCC rules and regulations;
- Be based on international standards;
- Be generic so that in different applications it can also be used on other EU-UK borders (like the Channel tunnel, air freight etc) and potentially as an example for other future EU borders;
- Be based on and utilize a combination of existing international operational best practices;
- Be based on an upgraded version of the Sweden-Norway Customs concept with additional features such as the Green Corridor concept and a Gateway solution that uses state-of-the-art technology solutions.

6.3.3 What is required for a Smart Border 2.0 solution?

- A bilateral EU-UK agreement regulating advanced customs cooperation avoiding duplication and with possibility to carry out tasks on each other's behalf;
- Mutual recognition of Authorised Economic Operators (AEO);
- A Customs-to-Customs technical agreement on exchange of risk data;
- Pre-registration of Operators (AEO) and People (Trusted Commercial Travellers programme in combination with a Certified Taxable Person programme);
- Identification system by the border;
- A Single Window with one-stop-shop-elements;
- A Unique Consignment reference number (UCR);
- Simplified Customs declaration system (100% electronic) with re-use of export data for imports;
- Mobile Control and Inspection Units;
- Technical surveillance of the border (CCTV, ANPR etc).

All of the concepts above are based on international standards.

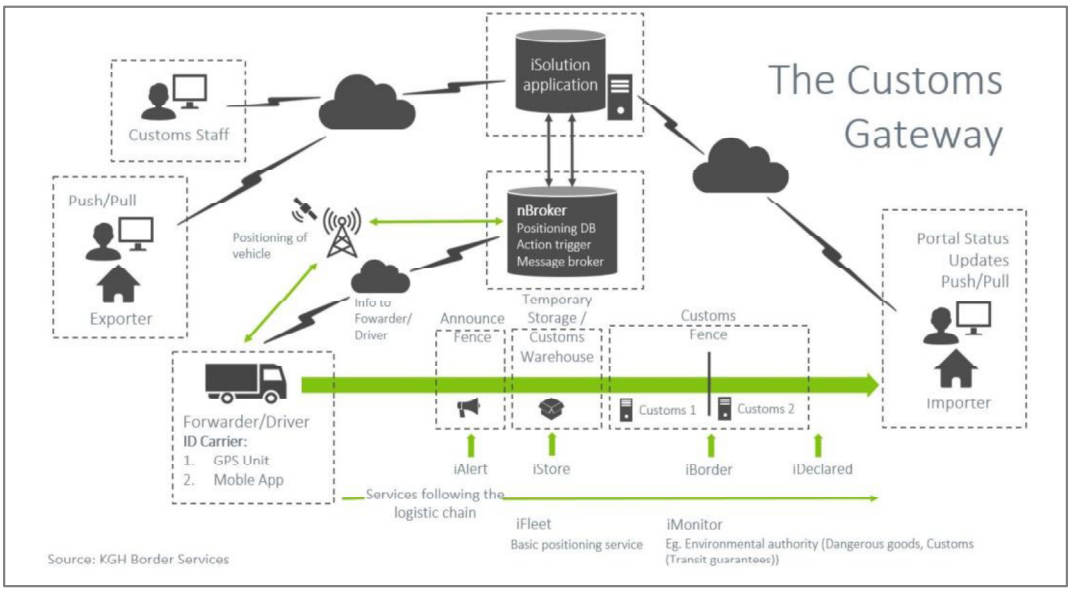
Figure 6: Smart Border 2.0 components



Source: KGH Border Services

There are several different options from a technical perspective for how identification at the border can be undertaken. One way is to use a Gateway solution as tested on the Sweden-Norway border, where existing infrastructure, like mobile technology networks, are used without additional investment costs for traders and travellers. RFID and similar technologies can also be utilised.

Figure 7: The Customs Gateway



Source: KGH Border Services

Depending on how the negotiations end in relation to the EU Security Zone and the status of UK, there may also be a need for a specific Customs-to-Customs cooperation agreement regulating security issues and the exchange of risk profiles. This should be based on the relevant international standard, which is World Customs Organizations SAFE Framework of Standards.

Scenario

This is how a normal border crossing in a Smart Border 2.0 environment could look:

> A company needs to move goods to a client in the UK. The company is pre-registered in the AEO database (AEO status or application for AEO Trusted Trader), a simplified export/import declaration is sent, including a unique consignment reference number. The transporting company is pre-registered in the AEO database and the driver of the truck is pre-registered in the Trusted Commercial Travellers database. The simplified export/import declaration is automatically processed and risk assessed. At the border the mobile phone of the driver is recognized/identified and a release-note is sent to the mobile phone with a permit to pass the border opening the gate automatically. A post-import supplementary declaration is submitted in the import country within the given time period. Potential controls can be carried out by mobile inspection units from EU or UK with right of access to facilities and data, as required.

6.3.4 Key concepts

The key concepts underpinning Smart Border 2.0 are:

Single Window

A national Government single window is an international standard for information management between the private sector and government in relation to import and export. It supports a process where a standardized set of information for import and export (and other requirements) is submitted once, processed by government agencies and sent back to the submitting entity as one single answer. It is one of the key components of the World Trade Organization (WTO) Trade Facilitation Agreement (TFA).

Smart Border
A Smart Border is normally described as a high-technology enabled border crossing with fast track solutions for specific registered traders and travellers meeting some pre-defined requirements.

One-Stop-Shop
A One-Stop-Shop is a coordinated border management approach where businesses, at import and/or export, have a single contact with one government agency also representing other agencies at the release of goods.

Gateway solution
The Gateway solution is a solution using existing infrastructure, such as mobile networks, for customs and government related information messages to and from businesses involved in import and/or export. It was first tested by Swedish Customs for Authorized Economic Operators at the Sweden-Norway border in 2003—2005. It can also be used to track vehicles in real time through GPS positioning.

Green Corridor
The Green Corridor is a solution to speed up supply chains through a fast track approach for AEOs and which re-uses export data as the basis for border processing and imports throughout the supply chain. It was tested between Sweden, Finland and Russia for a number of years.

Authorised Economic Operator (AEO)
Authorised Economic Operator (AEO) is a compliance management concept where companies on a voluntary basis register as trusted traders with customs (government) and, through self-assessment and customs validation, receive accreditation as Authorized Economic Operator giving predictability, speed and service in exchange for a certain level of compliance. The AEO concept is part of an international standard from the World Customs Organization (WCO) called SAFE Framework of Standards. The standard also makes it possible for two WCO Member States to acknowledge each other's AEO programmes in a technical Mutual Recognition Agreement (MRA), which makes it possible for a company to be granted the status in one country and being recognised in the other, avoiding duplication of controls and additional costs. There are countries that have implemented or have plans to implement multi-tier programmes, making it possible to have a lower level of registration, with fewer benefits that is better suited to SMEs or other businesses.

Trusted Traveller Program (TTP)
A compliance management concept similar to AEO where citizens voluntarily pre-register in a database with screening to get a fast track service when travelling.

Trusted Commercial Traveller Program (TCTP)
A specific sub-set compliance management concept to TTP above, for people commercially involved in international trade. Can be connected with AEO.

Certified Taxable Person program (CTP)
A compliance management concept to identify and pre-register a reliable tax-payer profile. Could be designed, developed and implemented in combination with the other compliance management concepts above and used for a Smart Border solution.

Unique Consignment Reference number (UCR)
A specific number regulated by a standard from the World Customs Organization that follows a consignment through its lifecycle in the global supply chain, making it possible for governments to identify and follow a specific consignment from a risk and compliance perspective.

ANNEX 1

Table 1: (2015) Estimated sales[a] to IE from NI

	Value (€ mns[b])
Sales of goods[c] from NI to IE[110]	3,789
Selected sectors[d111]:	
• Agri-food	862
• Production & other agricultural industries	998
• Construction industries	84
• Distribution industries	1650
• Service industries	194
Sales to IE as a % of total NI sales[112]	5.1%

Notes:
a. Sales includes all taxes and duties on goods invoiced with the exception of VAT which is excluded from total sales
b. All prices current prices. Where required, GBP/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2015
c. Includes Agriculture, Forestry And Fishing, Mining And Quarrying, Manufacturing, Electricity, Gas, Steam And Air Conditioning Supply, Water Supply; Sewerage, Waste Management And Remediation Activities Construction, Wholesale And Retail Trade; Repair Of Motor Vehicles And Motorcycles, Transportation And Storage Accommodation And Food Service Activities, Information And Communication, Real Estate Activities Professional, Scientific And Technical Activities, Administrative And Support Service Activities, Others.
d. Based on Standard Industrial Classification of Economic Activities (SITC)

Table 2: (2015) Estimated value of Ireland and Northern Ireland imports/exports[a] (€ mns[b])

SITC[c]	Irish Central Statistics Office[113]		UK HMRC[114]	
	Exports from NI to IE	Imports from IE to NI	Exports from NI to IE	Imports from IE to NI
Food and live animals	484	595	1009	1097
Beverages and tobacco	32	89	160	101
Crude materials, inedible, except fuels	60	74	121	157
Mineral fuels, lubricants and related materials	33	27	74	95

[110] Northern Ireland Statistical Research Agency (NISRA) Broad Economy Sales and Export Statistics (BESES), 2017 – Goods and Services Results, February 2017.
[111] UK Government, Additional Data Paper: Northern Ireland Trade Data and Statistics, August 2017, drawn from Northern Ireland Statistical Research Agency Broad Economy Sales and Export Statistics (BESES), 2017 – Goods and Services Results.
[112] Northern Ireland Statistical Research Agency (NISRA) Broad Economy Sales and Export Statistics (BESES), 2017 – Goods and Services Results, February 2017.
[113] Government of Ireland, Central Statistics Office, Brexit: Ireland and the UK in numbers, December 2016.
[114] UK Government, HMRC Regional trade statistics, 2017.

Animal and vegetables oils, fats and waxes	17	6	22	21
Chemicals and related products	65	194	247	276
Manufactured goods classified chiefly by material	128	233	516	375
Machinery and transport equipment	90	155	407	1265
Miscellaneous manufactured articles	76	201	485	288
Commodities and transactions not classified elsewhere	107	170	14	10
Totals	**1,092**	**1,744**	**3,055**	**3,685**

Notes:
a. Figures vary due to different methodologies, InterTradeIreland noted that "HMRC data tends to suggest larger trade flows – particularly regional exports from Northern Ireland – than the CSO data and this is spread relatively uniformly across sectors. This suggests a systematic rather than sectoral bias in the figures linked perhaps to methodology or approach rather than any particular sectoral effects."[115]
b. All prices current prices. Where required, GBP/EUR exchange rates based on European Central Bank, Euro foreign exchange reference rates, average for 2015
c. Standard International Trade Classification

[115] InterTradeIreland, 'Working paper: Investigation into north/south trade statistics', Methodological Profile and Time Series Comparisons, August 2009.

This study, commissioned by the European Parliament's Policy Department for Citizens' Rights and Constitutional Affairs at the request of the AFCO Committee, provides background on cross-border movement and trade between Northern Ireland and Ireland and identifies international standards and best practices and technologies that can be used to avoid a 'hard' border as well as case studies that provide insights into creating a smooth border experience. The technical solution provided is based on innovative approaches with a focus on cooperation, best practices and technology that is independent of any political agreements on the UK's exit from the EU and offers a template for future UK-EU border relationships.

DISCLAIMER
This document is addressed to the Members and staff of the European Parliament to assist them in their parliamentary work. The content of the document is the sole responsibility of its author(s) and should not be taken to represent an official position of the European Parliament.

Print ISBN 978-92-846-2241-2| doi: 10.2861/691719| QA-07-17-024-EN-C
PDF ISBN 978-92-846-2242-9| doi: 10.2861/88186| QA-07-17-024-EN-N