Digital Solutions to Fight against COVID-19 Pandemic in Croatia
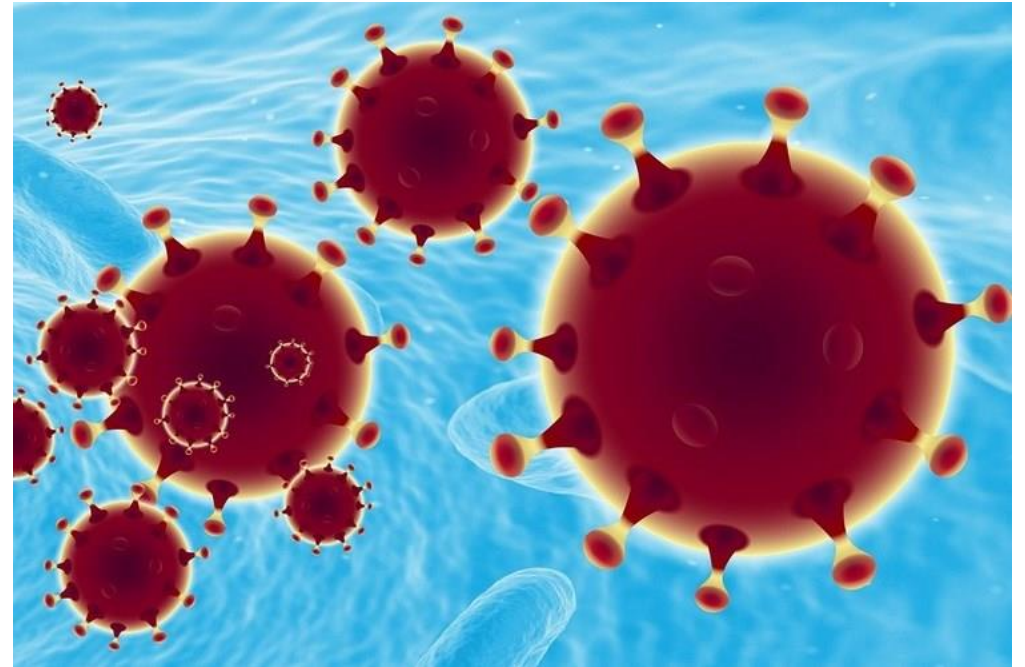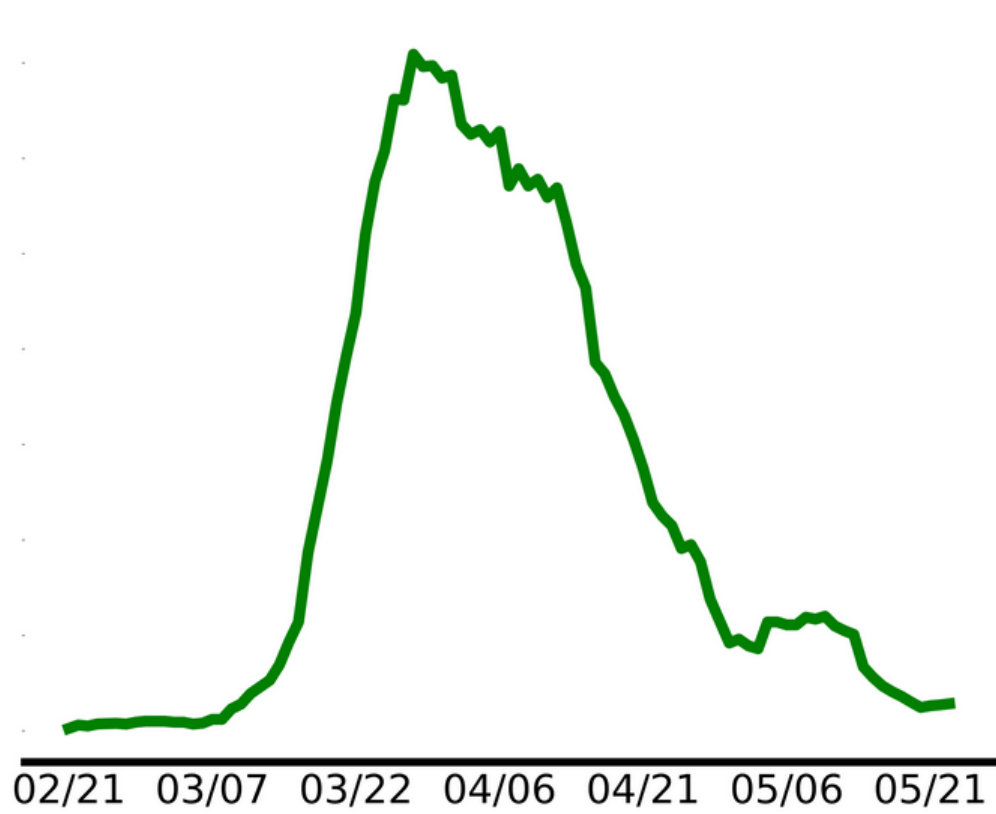
Mate Car, PhD

Deputy Minister, Ministry of Health

Agenda

- Introduction
- COVID-19 situation in Europe
- Koronavirus.hr
- Andrija.AI
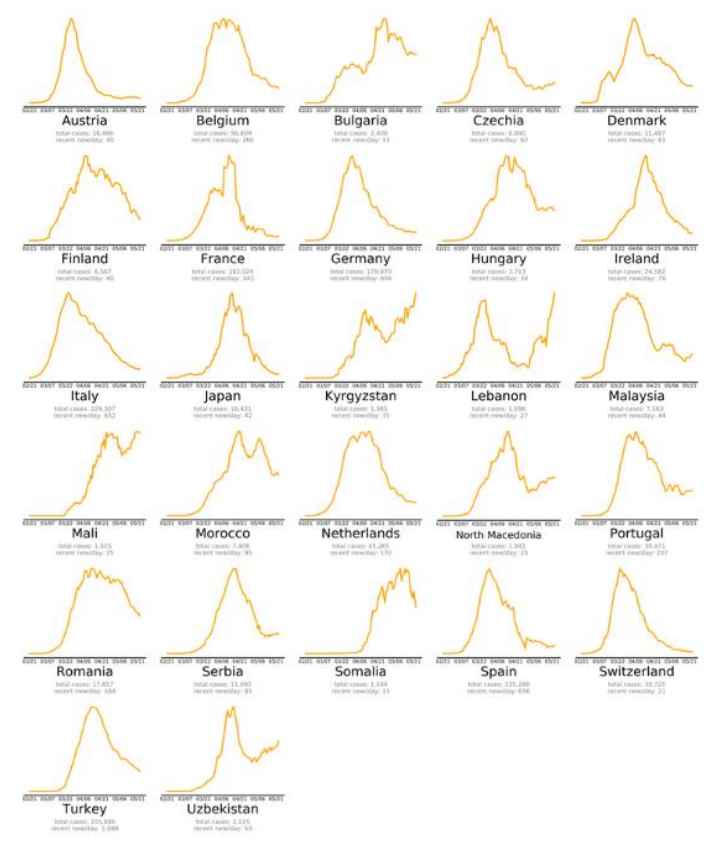- Mobile applications for exposure notification
- Conclusion

Croatia

total cases: 2,243
recent new/day: 2

Source: https://www.endcoronavirus.org

SOME ARE WINNING –
SOME ARE NOT

WHICH COUNTRIES DO BEST IN BEATING
COVID-19?
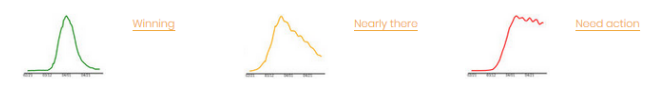
Introduction

- The use of digital technologies can effectively contribute to **better control and reduction of infection**, thereby ensuring the achievement of the goal of epidemiological surveillance, particularly in the relaxation of social distancing measures.

- They have to be a part of **integrative digital response** to COVID-19 and joint effort of EU Member States in applying digital solutions to fight against global health crisis.

In all aspects of your life,
#DigitalHelps

COVID-19 situation in Europe

#	Country, Other	Total Cases	New Cases
2	Spain	282,370	+466
3	UK	257,154	+2,959
4	Italy	229,327	+669
5	France	182,469	+250
6	Germany	179,986	+273
7	Belgium	56,810	+299
8	Netherlands	45,064	+176
9	Belarus	35,244	+941
10	Sweden	33,188	+379
11	Switzerland	30,725	+18
12	Portugal	30,471	+271
13	Ireland	24,582	+76

#	Country, Other	Total Cases	New Cases
14	Poland	20,931	+312
15	Ukraine	20,580	+432
16	Romania	17,857	+145
17	Austria	16,486	+50
18	Denmark	11,289	+59
19	Serbia	11,092	+68
20	Czechia	8,890	+77
21	Norway	8,346	+14
22	Moldova	6,994	+147
23	Finland	6,568	+31
24	Luxembourg	3,990	+9
25	Hungary	3,713	+35
26	Greece	2,876	+2
27	Bulgaria	2,408	+36
28	Bosnia and Herzegovina	2,391	+19

#	Country, Other	Total Cases	New Cases
29	Croatia	2,243	
30	North Macedonia	1,941	+20
31	Estonia	1,821	+14
32	Iceland	1,804	+1
33	Lithuania	1,616	+12
34	Slovakia	1,504	+1
35	Slovenia	1,468	
36	Latvia	1,046	+16
37	Albania	989	+8
38	Andorra	762	
39	San Marino	665	+4
40	Malta	609	+9
41	Channel Islands	558	
42	Isle of Man	336	
43	Montenegro	324	

Koronavirus.hr

- Koronavirus.hr, the **official government website for accurate and verified information on Coronavirus** has been launched on March 17th and updated frequently:
    - Website: https://www.koronavirus.hr/
    - Facebook: https://www.facebook.com/pg/koronavirus.sluzbeni
    - Instagram: https://www.instagram.com/koronavirus.sluzbeni/
    - Twitter: https://twitter.com/koronavirus_hr
    - YouTube: https://www.youtube.com/channel/UCIDHotnKx7VidVuWXRC2FSQ

- Also offering **open and machine-readable** (in JSON format) datasets:
    - https://www.koronavirus.hr/otvoreni-strojno-citljivi-podaci/526
    - http://data.gov.hr/dataset/koronavirus

Government
of the Republic
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EU2020HR
Croatian Presidency of the
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KORONAVIRUS.HR

Pretražite stranice

Vlada Republike Hrvatske — Službena stranica Vlade za pravodobne i točne informacije o koronavirusu

Najnovije | Što moram znati | Zadnje ažurirano | Vladine mjere | Županije | Važni brojevi | Savjeti | Podaci | **DONACIJE** | EN

Ažurirano 26.05. u 14:00

Izvor: Hrvatski zavod za javno zdravstvo

SLUČAJEVI
HR: 2.244
Svijet: 5.609.644

OPORAVLJENI
HR: 2.046
Svijet: 2.386.485

PREMINULI
HR: 101
Svijet: 348.319

16.557 Austrija
8
51
3.771 Mađarska
134
92
1.469 Slovenija
478
131
12
11
83
36
134
31
8
11.193 Srbija
92
43
41
20
2.406 Bosna i Hercegovina
87
89
230.158 Italija
549
324 Crna Gora
114
1.038 Kosovo

Nema novooboljelih u posljednja 24 sata

U posljednja 24 sata nema novooboljelih. Od dosad ukupno potvrđenih 2.244 osoba dosad se oporavilo 2.046 osoba. Preminula je stotinu i jedna osoba. Još je 97 osoba na liječenju.

26.05.2020. 14:00

Grafički pregled Hrvatska

Novozaraženi u Hrvatskoj

data.gov.hr
Portal otvorenih podataka Republike Hrvatske

Pretražite podatke...

👤 Prijava

Podaci | Aplikacije | Dodatni sadržaji | Kontakti

🏠 / Skupovi podataka / koronavirus

koronavirus

Objavljen od Hrvatski zavod za javno zdravstvo. Licencirani pod Creative Commons Attribution
Razina otvorenosti: ☆☆☆☆☆

Otvoreni (strojno čitljivi) podaci na web stranici koronavirus.hr, a koje prikuplja te ustupa Hrvatski zavod za javno zdravstvo te Ministarstvo zdravstva Republike Hrvatske s ciljem informiranja javnosti o epidemiji novog koronavirusa u Republici Hrvatskoj, ne podudaraju se s podacima koje svakodnevno na press konferencija u 14 sati iznosi Nacionali stožer civilne zaštite Republike Hrvatske. Podaci se osvježavaju jednom u danu te donose podatke za obradu u vremensku period jednog dana, tj. od 00:00 do 23:59 za prethodni dan (DoD). Drugim riječima, otvoreni (strojno) čitljivi podaci objavljuju sa 24-satnom odgodom.

Resursi podataka (5)

JSON — Dnevni podaci sumarni

JSON — Dnevni podaci zadnji dan

JSON — Dnevni podaci po zupanijama

JSON — Dnevni podaci po zupanijama zadnji dan
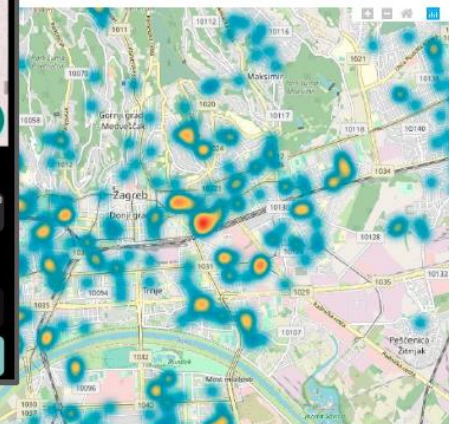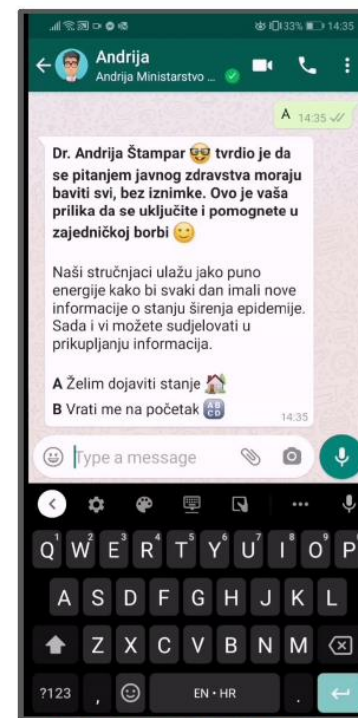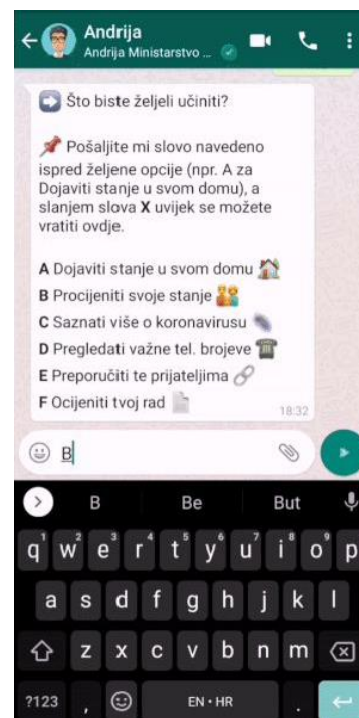
JSON — Podaci pozitivni pojedinacno po osobama

Andrija.AI

- As one of the globally first solutions introduced to citizens, on April 14th Croatia has launched **Andrija.AI, a digital assistant** for informing and advising citizens and facilitating the organisation of medical follow-up of persons with symptoms.

- Digital assistant Andrija enables **collaboration between government and citizens during pandemics**.

- Chatting with Andrija is like chatting with one of our leading epidemiologists

- Within a week since his launch, Andrija has managed to **reduce the number of calls to medical professionals** across all health centers in Croatia, and while still referring some people to the central coronavirus hotline 113, he provided most with reassurance that they need to stay at home and have no need to burden the health system, **resulting in a 25% drop of calls to 113.**

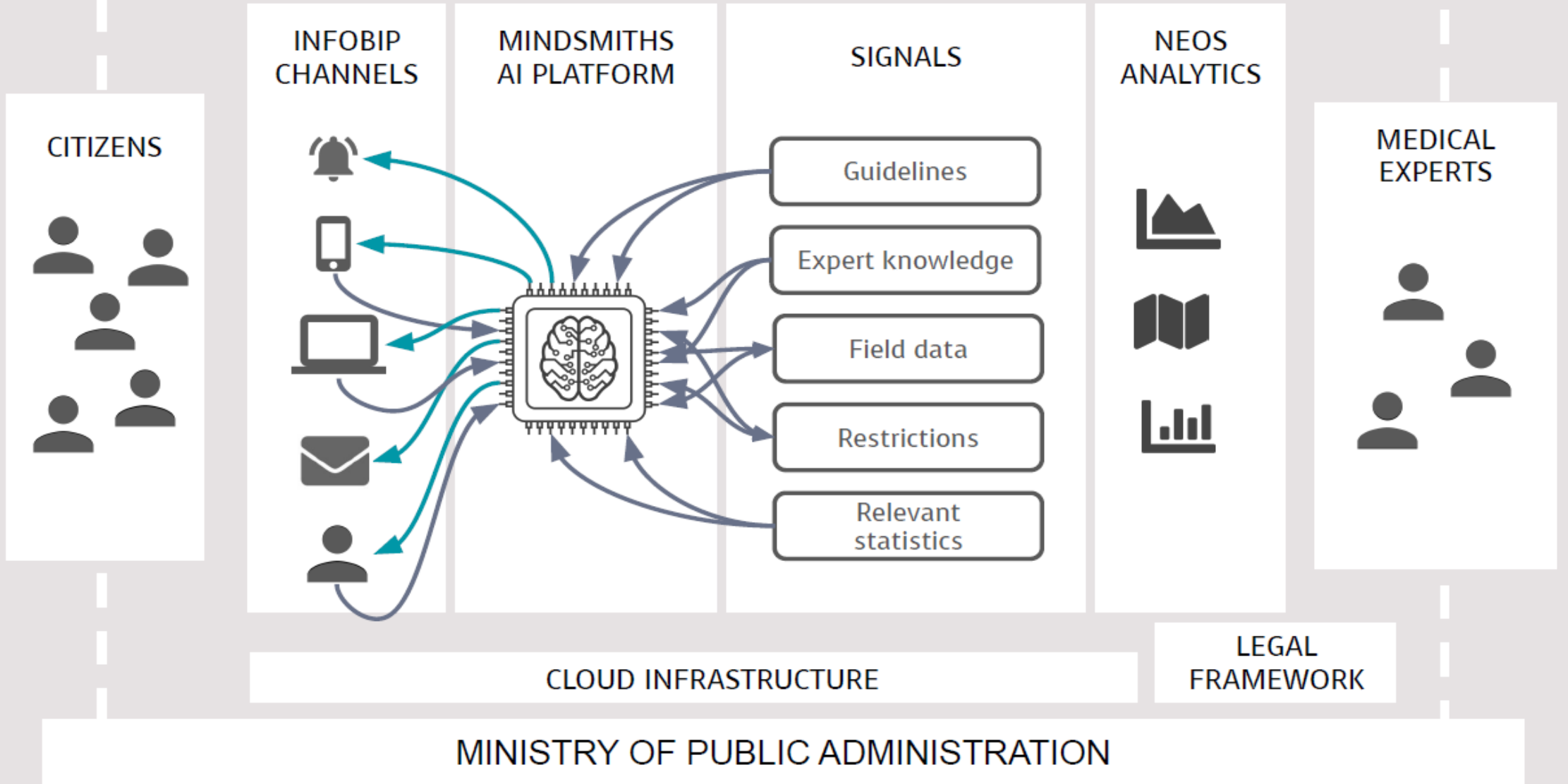# Andrija puts citizens in control of their situation

- Are you infected? Are you in danger? Who will help you if all lines are busy and you're not allowed to go to your doctor?

- When citizens start conversation with Andrija they learn how to assess their own situations and make the right move

- Andrija teaches citizens that there is no need for panic because there is a protocol for almost any situations

Architecture

ANDRIJA from MINISTRY OF HEALTH

CITIZENS

INFOBIP CHANNELS

MINDSMITHS AI PLATFORM

SIGNALS

- Guidelines
- Expert knowledge
- Field data
- Restrictions
- Relevant statistics

NEOS ANALYTICS

MEDICAL EXPERTS

CLOUD INFRASTRUCTURE

LEGAL FRAMEWORK

MINISTRY OF PUBLIC ADMINISTRATION
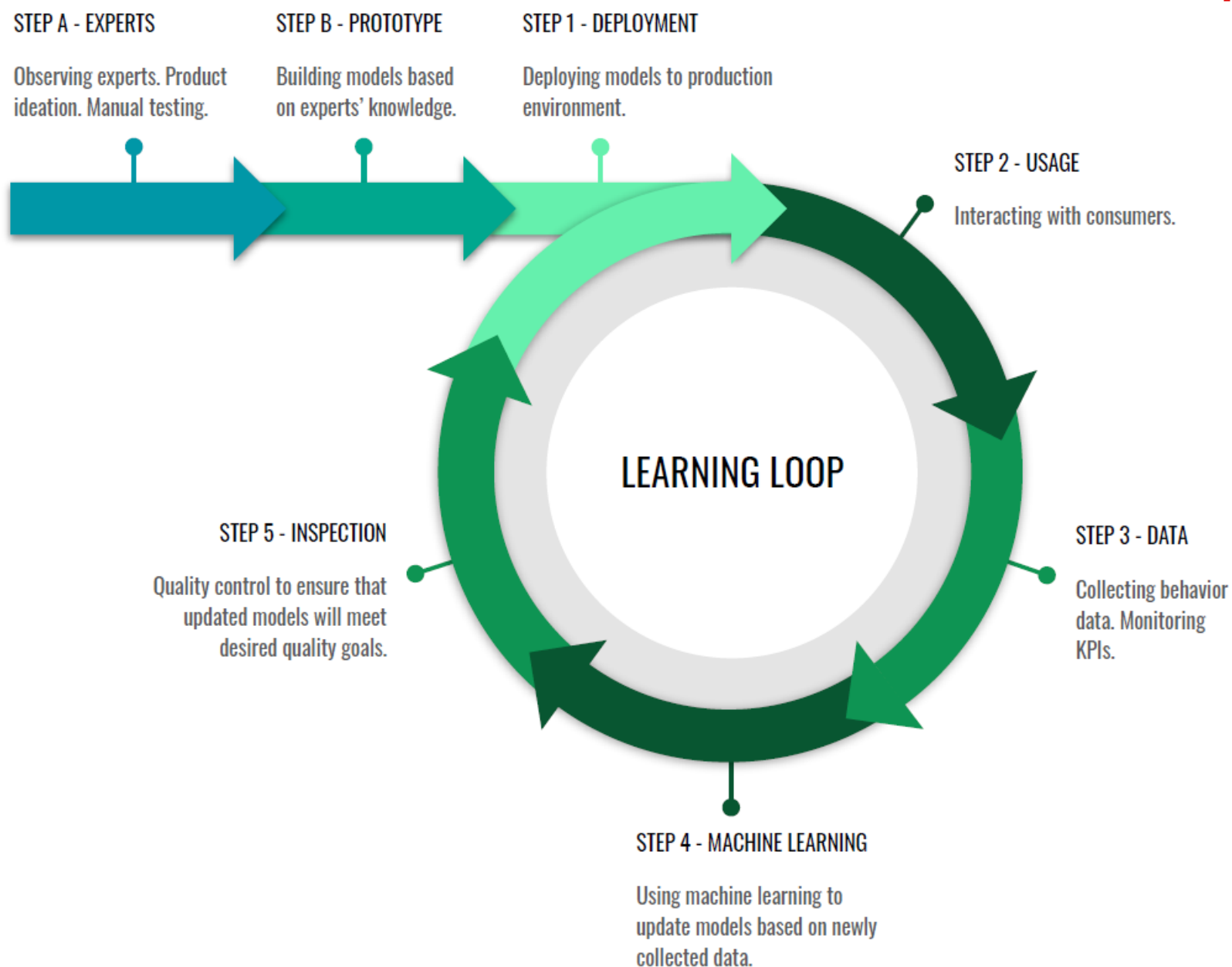
Andrija first learns from human experts and then from data.

Mindsmiths methodology ensures that AI products can be built even in situations where there is not enough relevant data to train machine learning algorithms.

Through a process of knowledge elicitation prototype is built based on expert's knowledge. We push the prototype into a production environment and start collecting relevant data. We feed machine learning algorithms with this newly acquired data to update models. This learning loop never stops improving product.

STEP A - EXPERTS

Observing experts. Product ideation. Manual testing.

STEP B - PROTOTYPE

Building models based on experts' knowledge.

STEP 1 - DEPLOYMENT

Deploying models to production environment.

STEP 2 - USAGE

Interacting with consumers.

LEARNING LOOP

STEP 3 - DATA

Collecting behavior data. Monitoring KPIs.

STEP 4 - MACHINE LEARNING

Using machine learning to update models based on newly collected data.

STEP 5 - INSPECTION

Quality control to ensure that updated models will meet desired quality goals.

Government of the Republic of Croatia

Croatian Presidency of the Council of the European Union

Mobile applications for exposure notification

- Aim: **warning people** who have been in proximity to a COVID-19 positive person in order to interrupt infection chains and preventing resurgence of infections in the reopening phase.

- EU Member States, with the support of the Commission, have developed a **Common EU Toolbox** to support the tracing and alerting of contacts as a response to the new coronavirus pandemic.

- These mobile applications have to be:
  - (1) **voluntary**,
  - (2) **approved** by the national health authority,
  - (3) **privacy-preserving** – personal data is securely encrypted, and
  - (4) **dismantled** as soon as no longer needed

1 Maria and Johan download the apps from their health authorities.

2 The app detects proximity of Maria and Johan.

<2m
>15 min

3 Code: 0546 Positive

Johan feels sick. He tests positive for COVID-19, he contacts his healthcare authorities and inserts a confirmation code on the app.

5 Maria is informed by her health authorities what to do next.

4 Maria gets a notification that she has been in proximity to an infected person. She seeks advice and consults her health authorities.

#CORONAVIRUS   #StrongerTogether

European Commission

1 Maria and Johan download the official apps of Member State A and Member State B respectively.

2 Maria travels to Member State B where the app detects her proximity with Johan.

<2m
>15 min

3 Maria travels back to her Member State A.

6 Maria is informed by her health authorities what to do next.

5 Maria gets a notification that she has been in proximity to an infected person. She seeks advice and consults her health authorities.

4 Johan feels sick. He tests positive for COVID-19, he contacts his health authorities and inserts a confirmation code on the app.

Code: 0546
Positive

#CORONAVIRUS   #StrongerTogether

European Commission

Conclusion

- These are some of the major examples of **applying digital solutions** to fight against COVID-19 pandemic in Croatia.

- It is important to ensure that citizens can **fully trust such innovative digital solutions** and can accept them without fear.

- **Maximum participation of citizens is necessary** to exploit the full potential of mobile applications to support exposure logging and notification.

- EU regulations, in particular the General Data Protection Regulation (GDPR) and the e-Privacy Directive, **offer the strictest safeguards of confidentiality** (e.g. voluntary access, data minimisation, time limit for data storage and application use) in order for such applications to operate broadly and accurately.

Thank you! Questions, please?

mate.car@miz.hr

Government
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Croatian Presidency of the
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Speaker biography

- Mate Car, PhD, is an Assistant (Deputy) Minister of the Minister of Health of Croatia and an Honorary Lecturer at Imperial College London, with a passion to combine his academic, managerial and policy experience to achieve a synergic effect and the best results.

- He was previously also the special Adviser to the Minister of Health (for Finances) and an Assistant Director at the Croatian Institute for Telemedicine. He is appointed by the Ministry of Health to lead the Working group responsible for creating the Croatian national strategy for the health sector till 2030.

- His main interests are in the complex interactions within the health system, ranging from financial incentives, digital health, and burden of disease and taking a structured approach to address various issues.

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