Vaccinating Data Against Abuse

Enabling Collaborative Health Ecosystems

www.datavaccinator.com

Future of Health and Care Delivery is human centric

- Human centric approach has shown better outcomes and satisfaction
- To deliver a human centric care and health-wellness, data collaboration and data access on demand is required.

Data collaboration ecosystems will expand: value based care, accountable care, care settings (health meets the patient in their settings), advanced tech based care like robotics, IoT etc.

Such data ecosystems are feeding the mega trend of **consumerization and retailization of healthcare**.

Risks of Managing Data are on the Rise

Data-driven Economy

The commercial value of data is on the rise (and so are associated risks) as organisations become more and more data-driven

Data Theft

Stealing data from a victim with the intent of compromising privacy or obtaining confidential information

Data Hack

Breaking the security of a computing system to steal data, corrupt systems/files, commandeer the environment or disrupt activities

Data Leakage

The unauthorized transfer of classified information from a computer or data center to the outside world

Regulation

Protection of data privacy and security (GDPR..) increase commercial risks (and fines). Complex regulation in sectors and jurisdictions

Data Breach

Intentional or unintentional release of private or confidential information to an untrusted environment

BIG DATA Ecosystems

Collaborative data sharing and analytics across a community of stakeholders generates new risks for individual data owners

Data Privacy and Data Collaboration …*WIP*

While regulation has been put in place …

- GDPR
- European Data Strategy and Data Governance Act
- Regulations on the Free Flow of Non-Personal Data
- Personal Data Protection Act (e.g. PDPA in Singapore)
- …

Adoption is lagging behind …

- High costs for stakeholders: from software industry to data managers and owners
- Slow implementation due to lack of IT specialists
- Traditional application development
- Non-replicable „project-by-project“ approach
- Immature open source market

Effective and affordable Data Collaboration

Clinicians need seamless, timely data at point of care

- 80% of data is unstructured (forms, notes, images)
- 80% of data important for health lies outside the clinical care - consumer data, payor data, pharmacy, wellness etc.
- Care collaboration is a data problem
- Interoperability is not equal to data copies every where

DataVaccinator saves money, time and improves the outcome

- Faciliates regulatory compliance
- Supports health organizations with innovation and care collaboration
- Supports monetisation of unstructured data
- Supports in better clinical outcome and satisfied patients
- Supports revenue cycle management (by capturing, storing and giving access to unstructured data)
- Contributes towards building a sustainable healthcare delivery system
- ***Leads the transformation from costly IT projects to affordable SaaS***

Data Collaboration needs Data Privacy

- **Today**, data privacy services are at version 1.0, adoption is low
- Costly custom development at low rate of reusability
- Inefficient, expensive projects at varying levels of quality
- Mere post-processing of vulnerable data

- **Tomorrow**, data privacy will be ubiquitous
- ✓ Urgency for data privacy and security everywhere
- ✓ High reusability with ease of integration and minimal footprint
- ✓ Affordability, even in the light of zillions of apps (e.g. IoT)

- **DataVaccinator's innovations and unique approach**
- Built-in data privacy and security with SaaS options
- Automation: leveraging machine learning and AI
- Maximum reach through open source, patented USPs

Mitigate Risks with DataVaccinator (DV)

DataVaccinator enabled applications manage PID and Contents separately, in realtime and in a secure and industrialised manner.

PII/PID

Personal identifiable inf./data
(IoT: Machine identifiable data)

Low PSI Data
(Privacy Security Impact)

Contents

Low PSI Data

Data-driven Economy

Enabled with built-in pseudonymisation

Data Breach

Damage control: Breach of low PSI data

Data Theft

Damage control: Theft of low PSI data

Data Hack

Damage control: Hack of low PSI data

Data Leakage

Damage of leak limited to low PSI data

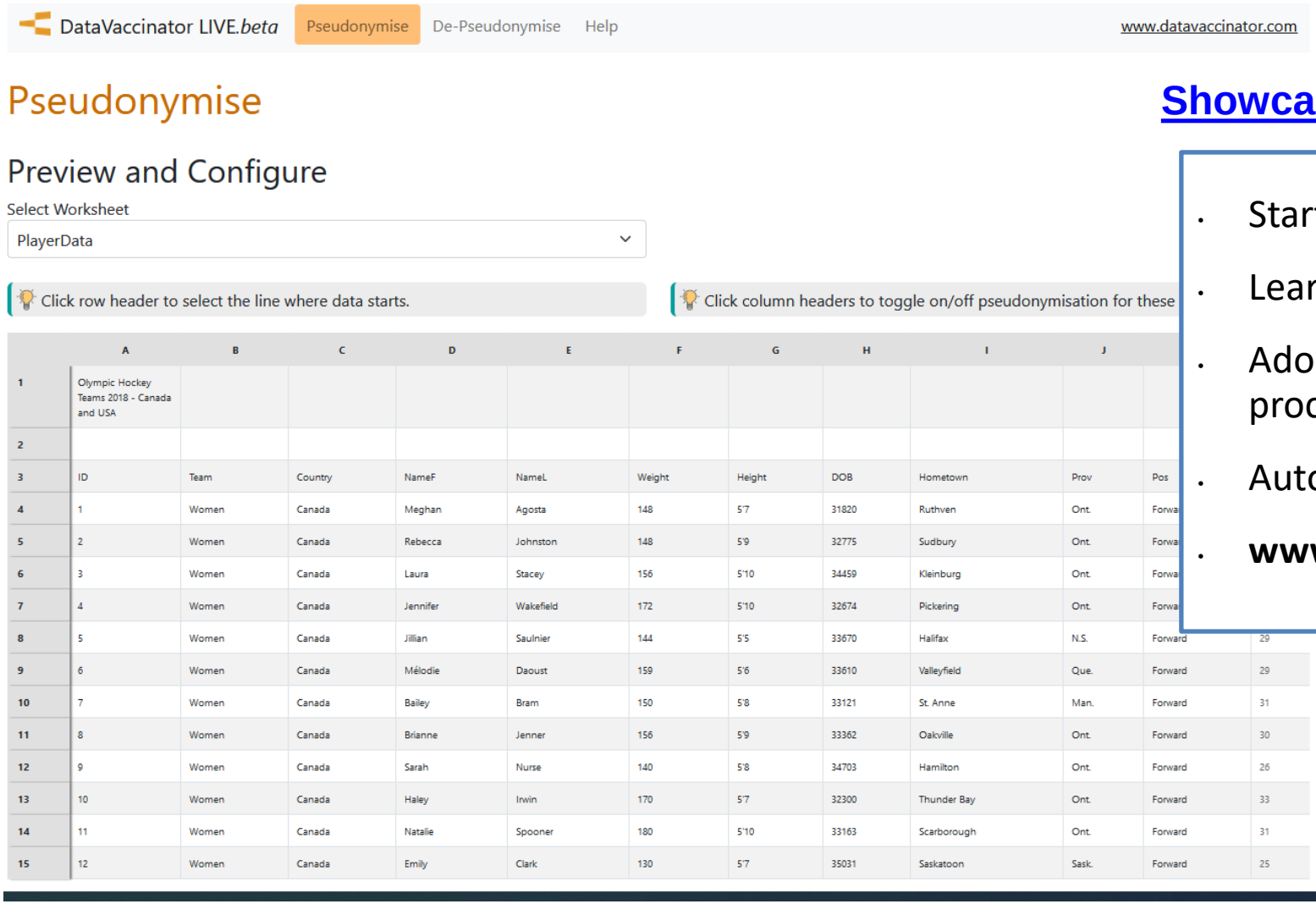
Regulation

Built-in compliance to satisfy regulation

BIG DATA Ecosystems

Facilitated with industrialised pseudonymisation

Simplify, Learn and Automate



	A	B	C	D	E	F	G	H	I	J	
1	Olympic Hockey Teams 2018 - Canada and USA										
2											
3	ID	Team	Country	NameF	NameL	Weight	Height	DOB	Hometown	Prov	Pos
4	1	Women	Canada	Meghan	Agosta	148	5'7	31820	Ruthven	Ont.	Forwa
5	2	Women	Canada	Rebecca	Johnston	148	5'9	32775	Sudbury	Ont.	Forwa
6	3	Women	Canada	Laura	Stacey	156	5'10	34459	Kleinburg	Ont.	Forwa
7	4	Women	Canada	Jennifer	Wakefield	172	5'10	32674	Pickering	Ont.	Forwa
8	5	Women	Canada	Jillian	Saulnier	144	5'5	33670	Halifax	N.S.	Forward
9	6	Women	Canada	Mélodie	Daoust	159	5'6	33610	Valleyfield	Que.	Forward
10	7	Women	Canada	Bailey	Bram	150	5'8	33121	St. Anne	Man.	Forward
11	8	Women	Canada	Brianne	Jenner	156	5'9	33362	Oakville	Ont.	Forward
12	9	Women	Canada	Sarah	Nurse	140	5'8	34703	Hamilton	Ont.	Forward
13	10	Women	Canada	Haley	Irwin	170	5'7	32300	Thunder Bay	Ont.	Forward
14	11	Women	Canada	Natalie	Spooner	180	5'10	33163	Scarborough	Ont.	Forward
15	12	Women	Canada	Emily	Clark	130	5'7	35031	Saskatoon	Sask.	Forward

Showcase Pseudonymiser

- Start with manual control
- Learn as you progress
- Adopt ML / AI based on processed data
- Automate workflows
- **www.pseudonymiser.net**

DataVaccinator – Transforming Collaboration in Healthcare

USPs

- Founders + Board -> expertise + global network
- Open Source -> scale, SaaS -> recurring business
- Data Privacy IPR protected (cost-effective, secure processes for data sharing)

DATA DE-RISKING - - -> DATA ANALYTICS

TRUST drives Growth

Data Privacy as a Service
Innovation contract with Luxembourg Government
1st patent (pending)

Advisory Board

- Dr. Amit Rana
- Dr. Francesco de Meo
- Kim Berknov

SETUP

Senior Founders
Kurt Kammerer
Volker Schmid

HEALTH DATA DE-RISKING
(SaaS + Automation + AI/ML)

Enhance Product Portfolio (b2b)

- SaaS/Automation/AI/ Machine Learning (ML)
- Tech USPs via IPR (patents)

Transform project work into replicable SaaS

Grow in Europe and expand to other regions

GLOBAL HEALTH DATA BUSINESS

Health Data De-Risking and Collaboration Platform
Protect, Manage, Analyze, Report
Product Portfolio (b2b)

- Grow generic capabilities (AI/ML)
- Build specific offerings (diseases, analytics..)
- Integrate 3rd party apps

Expand IPR (patent portfolio)
Grow internationally

- Asia Pacific, Europe, MENA, North America

The global healthcare analytics market size was estimated at USD 37.15 billion in 2022 and is expected to reach over USD 121.1 billion by 2030 and poised to grow at a CAGR of 15.9% from 2022 to 2030. Source: Precedence Research

Study Period	2019-2027
Base Year For Estimation	2022
CAGR	16.20 %
Fastest Growing Market	Asia Pacific
Largest Market	North America
Market Concentration	Medium
Major Players	ORACLE Cerner, Allscripts, IBM, GE, Epic

Source: Mordor Intelligence

2021/22 — 2023 — 2024 — 2025 and beyond

Appendix

Use Cases beyond Healthcare

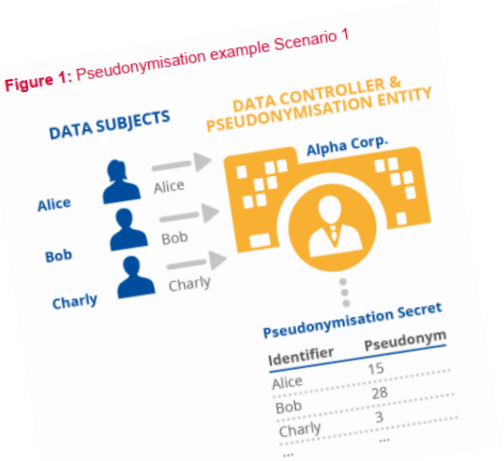
Data Privacy must be at the core of any data-sensitive application and is the prerequisite for the sharing of data and data economy.

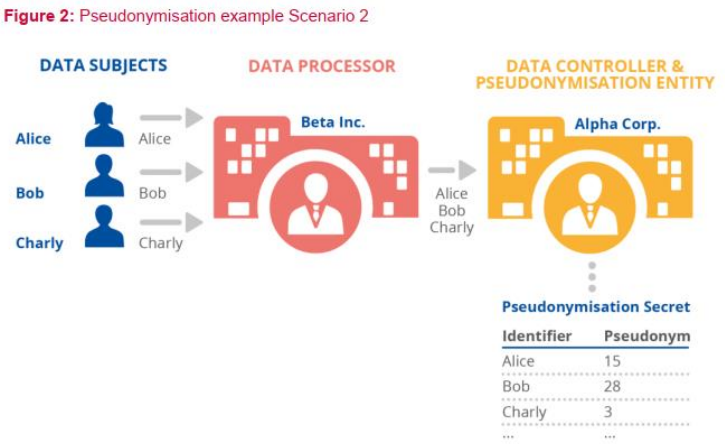
- **E-Health:** collaboration between all stakeholders, from medical records to clinical studies

  -> **DataVaccinator will focus on E-Health first, then replicate in other verticals.**
- **E-Finance**: Loyalty programs, Payment transactions, e-lending, e-banking, e-insurance
- **E-Media, Smart home, E-Commerce**: Tracking and tracing of users and their behavior
- **Smart home, buildings, city** based on IoT data collection and processing
- **Industry 4.0**: Supply chain data exchanges, ecosystem collaboration
- **E-Mobility**: Location-based traffic flow management and analytics, Autonomous driving
- **E-Energy**: Smart metering, profile-based pricing
- **Open Data initiatives** (e.g. public services)

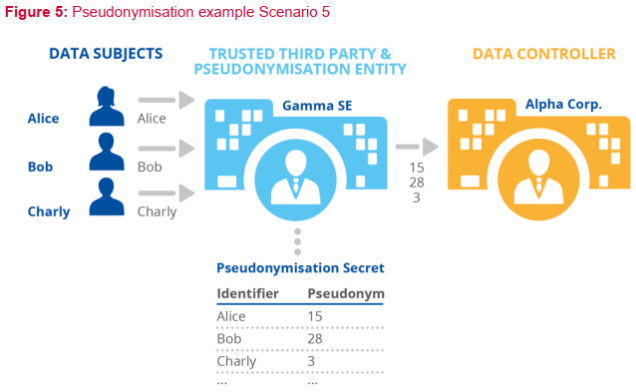
DataVaccinator – for any data-sensitive application

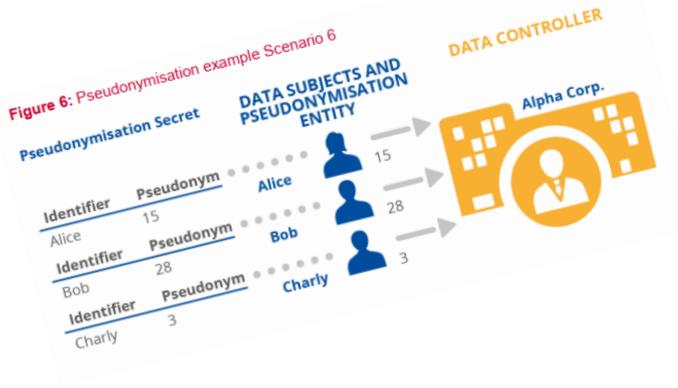
DataVaccinator – Support of Key Scenarios





DataVaccinator





Source: https://www.enisa.europa.eu/publications/pseudonymisation-techniques-and-best-practices

DataVaccinator – Flexible Operation Model

The DataVaccinator service may be operated by **third parties** that can offer their services to multiple other parties (globally and at high SLAs).

Organisations such as hospitals, universities, banks, insurers, retailers or manufacturers may want to operate their **own private or public instances** of the DataVaccinator service.

DataVaccinator – for Local Applications

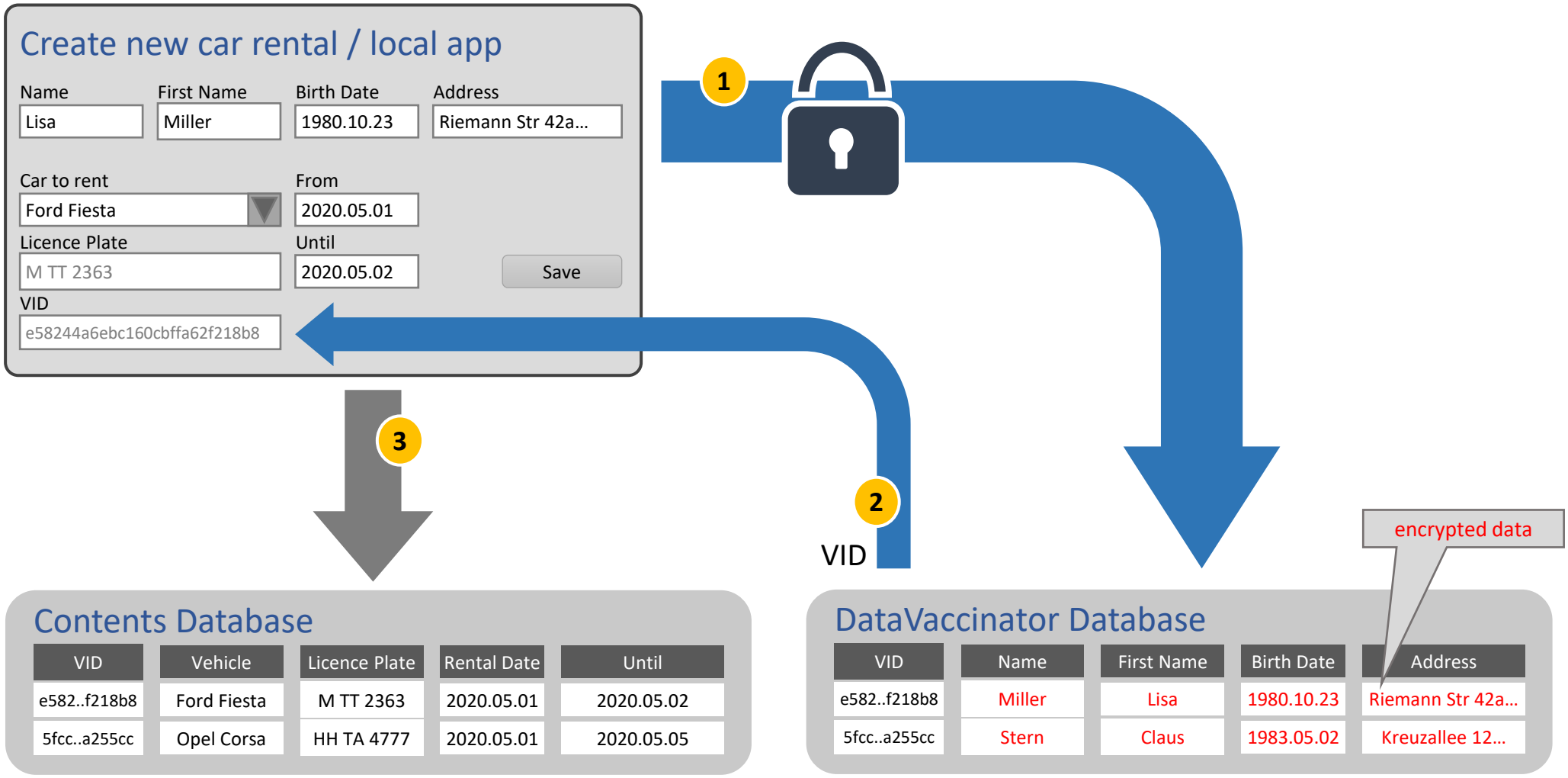


Figure: use case car rental (local app example)

DataVaccinator – for Web Applications

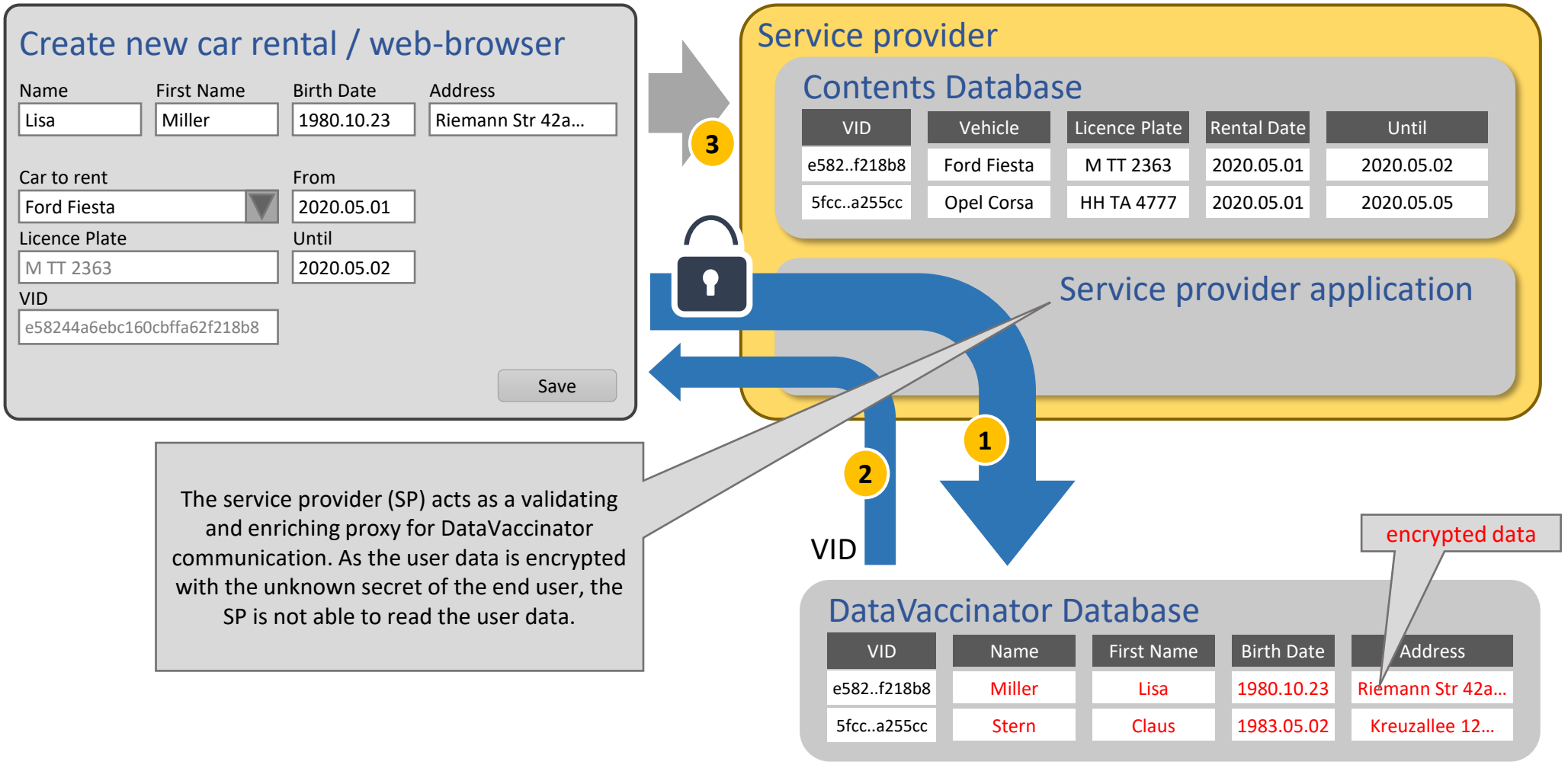
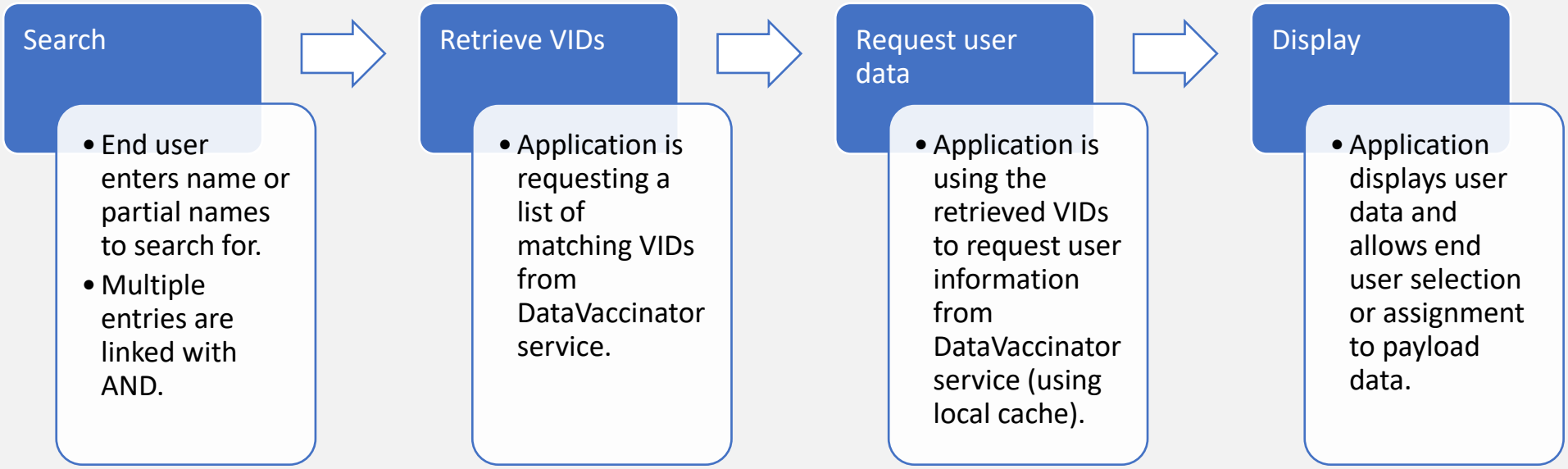


Figure: use case car rental (web app example)

DataVaccinator – Efficient Processing

Typical workflow for accessing data using DataVaccinator



Online searching within encrypted data for specific and partial tokens
Broad applicability as key tasks are enabled without compromising security.

DataVaccinator – Easy Integration

Example use of the JavaScript class: storing new user data

```
const appId = 'Rc-De_6nyCbb'; // Adapt to your needs

const providerUrl = 'https://vaccinator.de.regify.com/service.php';

// Create some example Vaccination Data
const vData = '{"firstname":"Spongebob","lastname":"Squarepants", '+
              '"Gender":"male","address_street":"Bikini Street", '+
              '"address_number":"42","address_city":"Bikini Bottom", '+
              '"address_zip":"12345", "address_country":"Pacific Sea", '+
              '}';

example(); // call example function

async function example() {
  try {
    // Create new instance of DataVaccinator class
    var v = new vaccinator();

    // Initialize with some service provider url, user, pwd and App-ID
    await v.init(providerUrl, 'volker', appId, 'password');

    // Enable search function using "firstname" and "lastname" vData fields
    v.enableSearchFunction( [ 'firstname', 'lastname' ] );

    // Upload and register Vaccination Data
    var vid = await v.new(vData);
    console.log('The new user Vaccination ID is ' + vid);

  } catch (e) {
    // catch any vaccinator class errors from here
    console.error(e);
  }
}
```

Full working JavaScript example uploading a sample user dataset to the DataVaccinator service.

The JavaScript class takes care of encryption (AES256), generation of secure SearchHashes, server communication incl. authentication and local caching (using browser database).

The JavaScript class allows full asynchronous usage and is compatible with web browsers and also node.js.

Modules and libraries for other environments are in preparation.

Vaccinate your data!

Thank you and get in touch.

info@datavaccinator.com