

How to Download, Install, and Run Consent2Share

SAMHSA's Open Source Data Segmentation and Consent Management Application

April 25, 2018

1:00 p.m. – 2:30 p.m.



SAMHSA
Substance Abuse and Mental Health
Services Administration

Section One: Introduction to Consent2Share

Section Two: Overview of Consent2Share Architecture

Section Three: Technical and Organizational Considerations

Section Four: Obtaining Consent2Share

consent₂share

Introduction to Consent2Share



Ken Salyards

Information Management Specialist
Substance Abuse and Mental Health Services
Health Information Team



Section One: Introduction to Consent2Share



Leading Change 2.0: Advancing the Behavioral Health of the Nation 2015–2018

Behavioral Health is Essential to Health

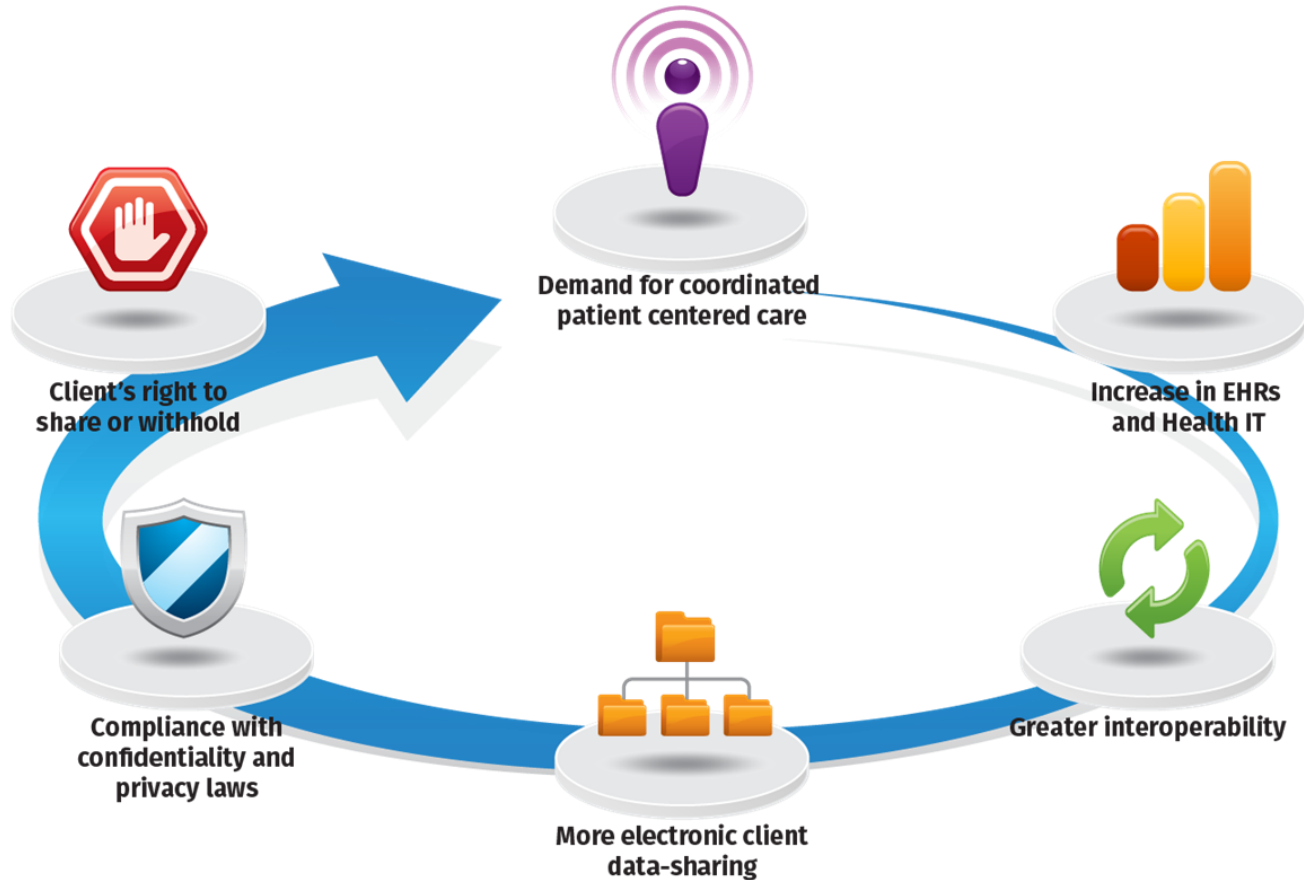
Prevention Works

Treatment is Effective

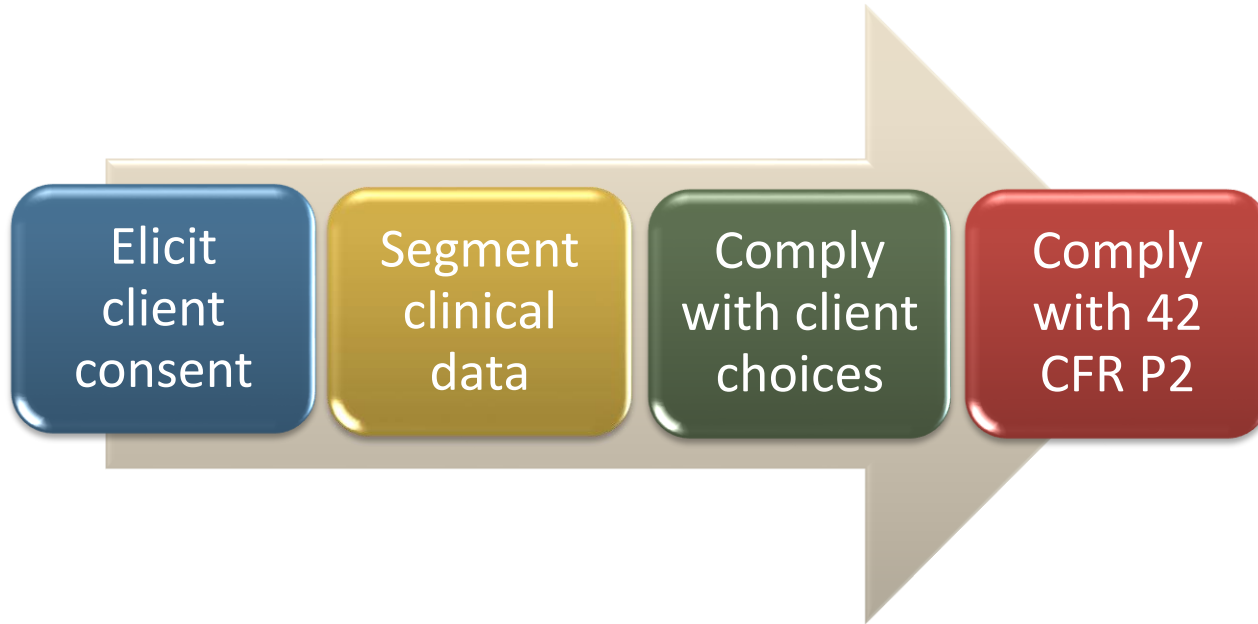
People Recover



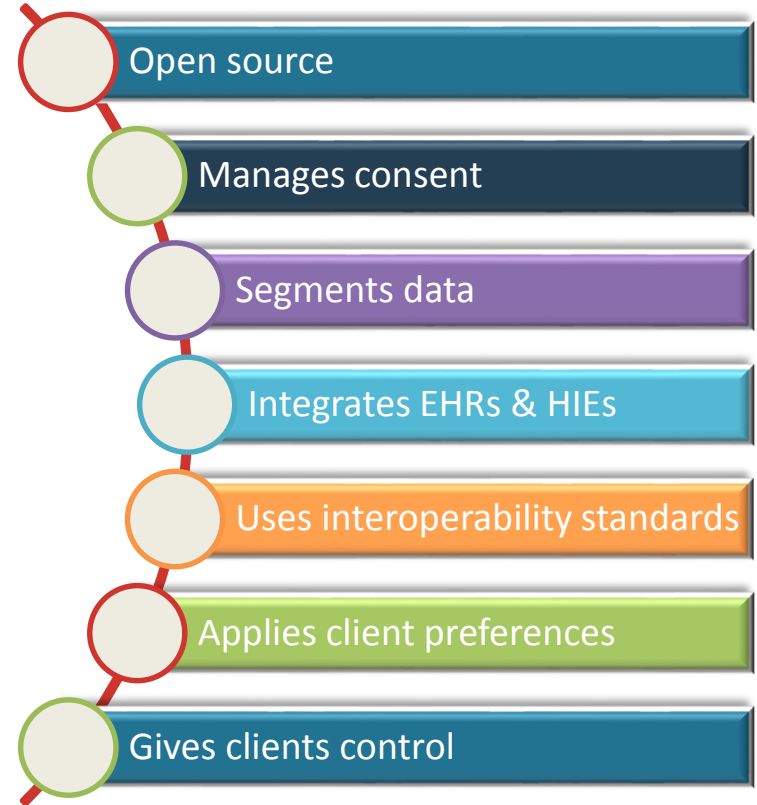
The Current Health Care Environment



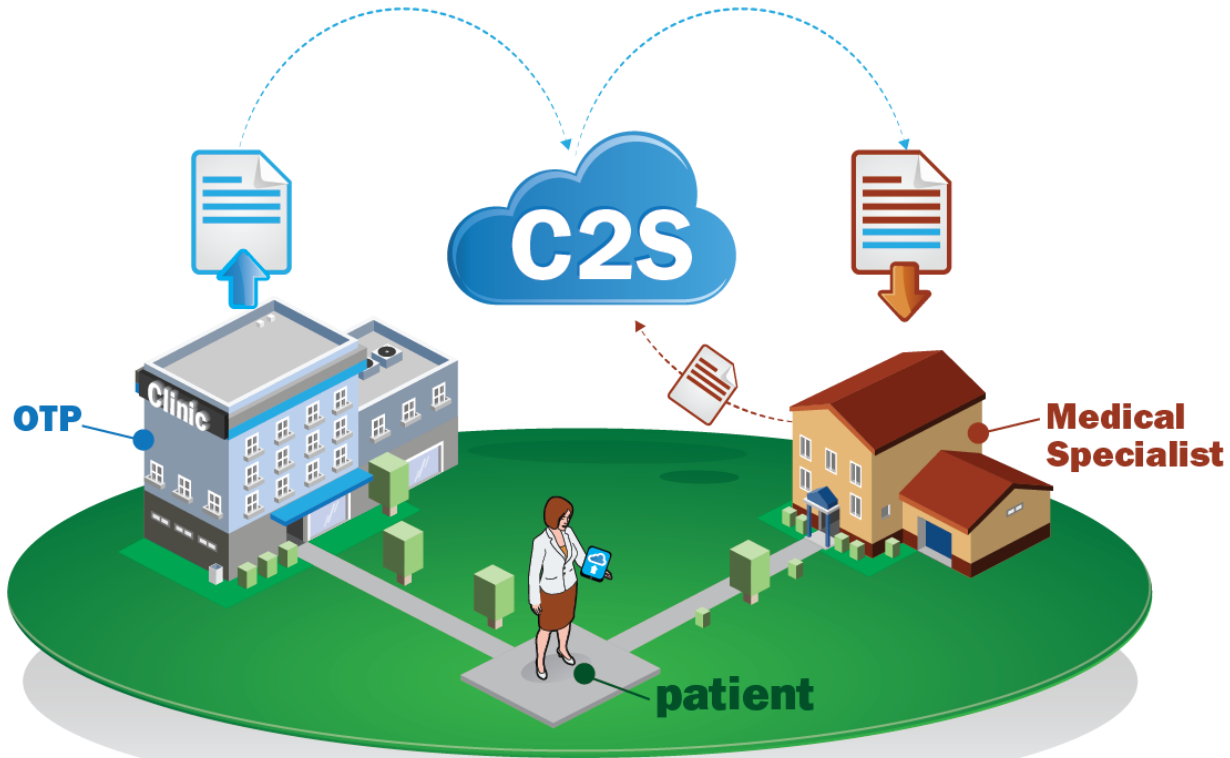
Need for Data Segmentation & Consent Management



consent₂share



Client Controls Information Exchange



Consent2Share: Patient Provides Electronic Consent

**CONSENT FOR THE RELEASE OF
CONFIDENTIAL INFORMATION**

I, _____, authorize
(Name of patient)

_____ the
(Name or general designation of alcohol/drug program making disclosure)
to disclose to _____
(Name of person or organization to which disclosure is to be made)

following information: _____
(Nature and amount of information to be disclosed; as limited as possible)

The purpose of the disclosure authorized in this is to:

(Purpose of disclosure, as specific as possible)

I understand that my alcohol and/or drug treatment records are protected under the Federal regulations governing Confidentiality and Drug Abuse Patient Records, 42 C.F.R. Part 2, and the Health Insurance Portability and Accountability Act of 1996 ("HIPAA"), 45 C.F.R. pts 160 & 164, cannot be disclosed without my written consent unless otherwise provided for by the regulations. I also understand that I may revoke this consent at any time except to the extent that action has been taken in reliance on it, and that in any event this consent expires automatically as follows:

(Specification of the date, event or condition upon which this consent expires)

I understand that I might be denied services if I refuse to consent to a disclosure for purposes of treatment, payment, or health care operations, if permitted by state law. I will not be denied services if I refuse to consent to a disclosure for other purposes.

I have been provided a copy of this form.

Dated: _____
Signature of Patient

Signature of person signing form if not patient

Describe authority to sign on behalf of patient _____



consent2share Menu

Sally Share
EN

Consent to Share My Medical Information

Consent Reference Number: **RwBL42pZuT**
Patient Name: **Sally Share** Patient DOB: **Sep 9, 1940**

AUTHORIZATION TO DISCLOSE

Authorizes:
C2S-My Care Team Members

To disclose to:
C2S-My Care Team Members

HEALTH INFORMATION TO BE DISCLOSED

To SHARE the following medical information: HIV/AIDS information Substance use information Mental health information Sexuality and reproductive health information	To SHARE for the following purpose(s): Treatment
---	--

CONSENT TERMS

I, Sally Share, understand that my records are protected under the federal regulations governing Confidentiality of Alcohol and Drug Abuse Patient Records, 42 CFR part 2, and cannot be disclosed without my written permission or as otherwise permitted by 42 CFR part 2. I also understand that I may revoke this consent at any time except to the extent that action has been taken in reliance on it, and that any event this consent expires automatically as follows:

Effective Date: Dec 12, 2017 **Expiration Date:** Dec 12, 2018

I, Sally Share, hereby accept, and understand the terms of this consent.

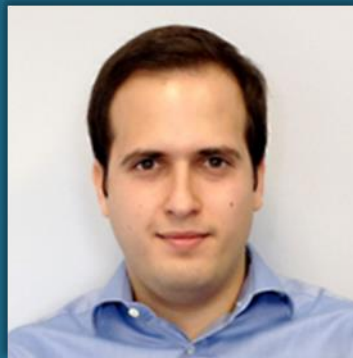
Cancel Complete

Copyright©2018

Architecture, Considerations, and Obtaining



Stan Peabody
Software
Tester
FEI Systems



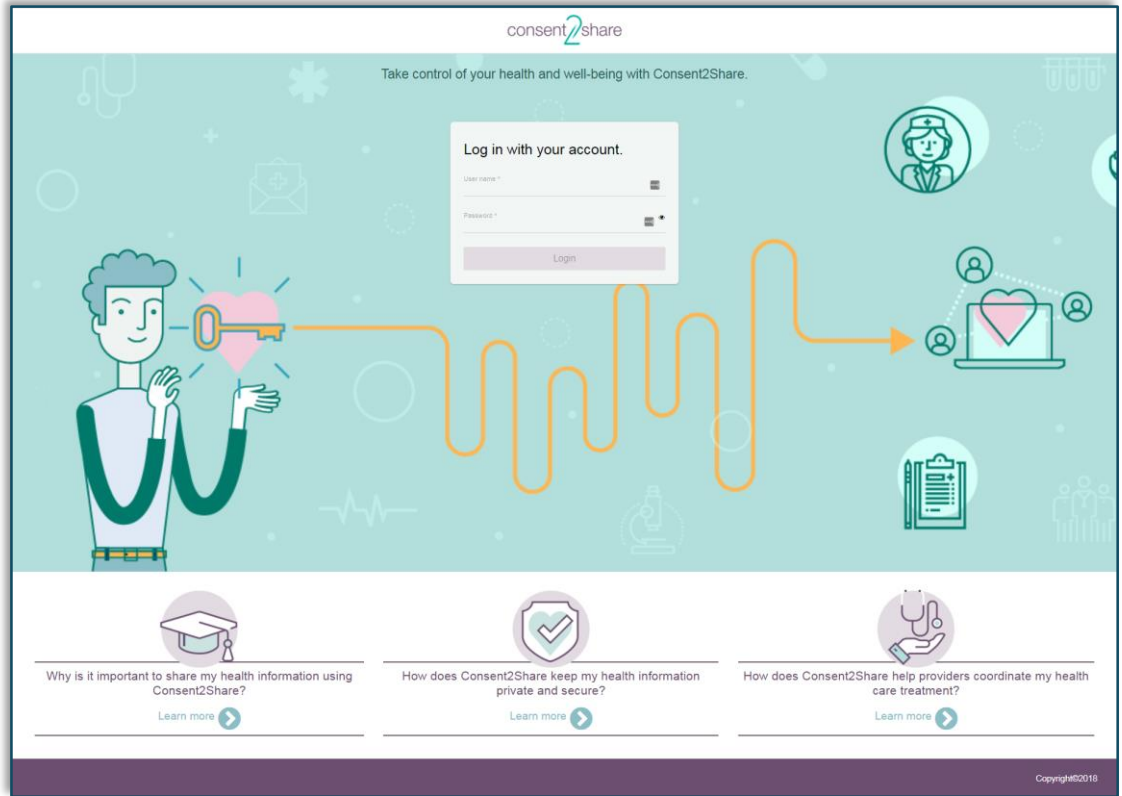
Burçak Uluğ
Sr. Application Developer
FEI Systems

Section Two: Overview of Consent2Share Architecture



Technical Benefits of Consent2Share

- Open-source web application
- Web-based user interface for consent management and data segmentation
- Enables data redaction, data segmentation, and patient-driven consent preferences



Technical Benefits of Consent2Share, Continued

- Includes value set management
- Integrates with existing EHR and HIE systems
- Uses interoperability standards
- Complies with DS4P, Section 508, HL7, 42 CFR Part 2, HIPAA
- Supports behavioral health data integration with Fast Healthcare Interoperability Resources (FHIR) Servers



Technical Benefits: A Component Approach

- Consent2Share consists of discrete components
- One component is separate from another component
- Modular approach allows greater customization



Two Consent2Share Editions

Consent2Share HIE Edition	Consent2Share Manual Edition
<ul style="list-style-type: none">Integrates with HIE systems	<ul style="list-style-type: none">Does not require HIEWorks with low-tech workflow (phone/FAX)Providers manually upload/download recordsNominal impact to workflow and integration

- Two Editions
- Same code base
- Meets providers where they are
- Aligns with providers' resources and capabilities



Technical Overview: Technology Stack

- Angular JS
- Angular
- Material
- Angular CLI
- Node.js
- NPM
- MD2
- RXJS
- TypeScript
- JavaScript - ES6
- HTML5
- CSS3
- Oracle Java 8
- Spring Framework
- Spring Boot
- Spring Cloud
- Apache Maven
- Apache Tomcat
- MySQL
- Flyway
- Docker and Docker Compose
- Cloud Foundry UAA Server

Technical Overview: Architecture

- Employs a Microservices architecture



- ✓ Highly scalable
- ✓ Flexible
- ✓ Resilient

- Consent2Share Components:

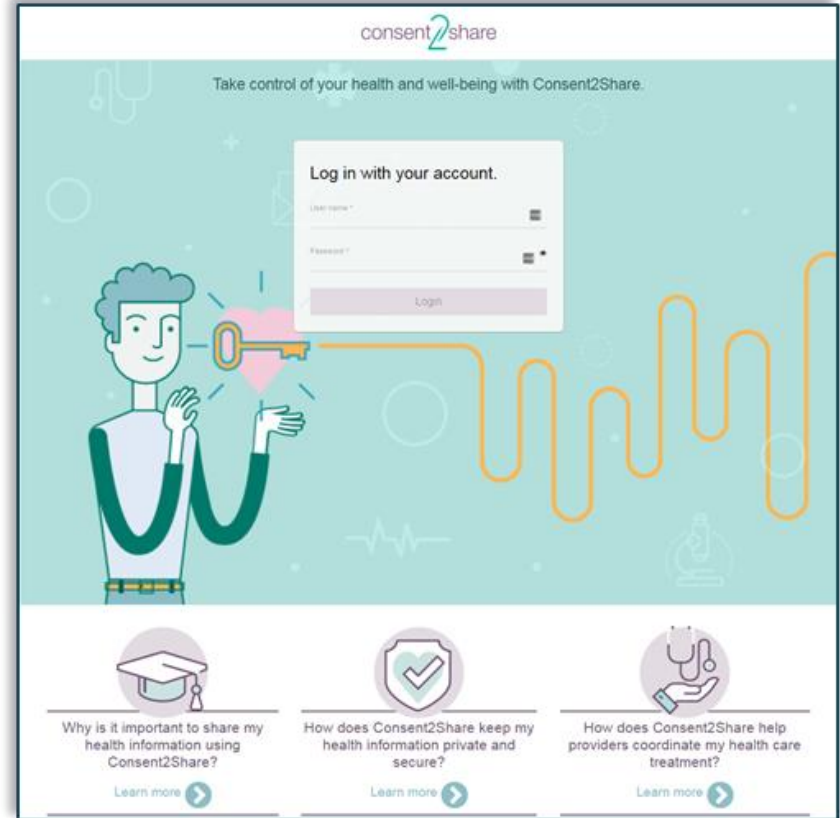
- ✓ User Interfaces
- ✓ Microservices
- ✓ Supporting Infrastructure Services
- ✓ Third-party Services

- Spring Boot
- Spring Cloud
 - ✓ Spring Cloud Netflix
 - ✓ Spring Cloud Security



Technical Overview: Four User Interfaces

Patient UI	For patients to review and manage their consents
Provider UI	For providers to create and manage patient accounts
Staff UI	An admin UI to create and manage user accounts
Master UI	A single UI to login as patient, provider, or staff



Technical Overview: Microservices

- Master UI API
- Patient UI API
- Provider UI API
- Staff UI API
- User Management Service
- FHIR Integration Service
- Provider Lookup Service
- Policy Enforcement Point Service
- Context Handler
- Patient Consent Management Service
- Patient Health Record Service
- Try My Policy
- Document Segmentation Service
- Document Validator Service
- Value Set Service

Technical Overview: Microservices

Patient UI API	Backend For Frontend components
Provider UI API	
Staff UI API	
Master UI API	

Technical Overview: Microservices

User Management Services	<ul style="list-style-type: none">• User account creation process• User account activation• User disable• User update• User demographics persisting
FHIR Integration Services	<ul style="list-style-type: none">• Spring Boot project• Provides RESTful endpoints• Allows applications to publish and retrieve FHIR resources
Provider Lookup Services	<ul style="list-style-type: none">• Stores provider information as a provider directory• Provides a RESTful service for querying providers• Uses query parameters:<ul style="list-style-type: none">✓ First name, last name, gender, address, and phone for providers✓ Organization name, address, and phone for organizational providers

Technical Overview: Microservices

Policy Enforcement Point Service	<ul style="list-style-type: none">• Delegates the access decision to the Context Handler API• Uses the Document Segmentation Service for segmenting CCD documents
Context Handler	<ul style="list-style-type: none">• Makes PERMIT/DENY access decisions based on request contexts• Uses Policy Decision Point to evaluate requests against authorization policies
Patient Consent Management Service	<p>Provides APIs for patients to manage their electronic consents including:</p> <ul style="list-style-type: none">✓ Create consent✓ Edit consent✓ Delete consent✓ Consent eSignature✓ Manage patient provider list

Technical Overview: Microservices

Patient Health Record Service	<ul style="list-style-type: none">• Manages and retains information about each patient• Manages C32 and/or C-CDA documents that patients have uploaded to test their consents using TryMyPolicy
Try My Policy	<ul style="list-style-type: none">• Enables patients to preview a redacted version of their health record
Document Segmentation Service	<ul style="list-style-type: none">• Segments patients' sensitive health information• Uses the privacy settings selected in the patient's consent

Technical Overview: Microservices

Document Validator Service	<ul style="list-style-type: none">• Validates C32, C-CDA R1.1 and C-CDA R2.1 clinical documents• RESTful Web Service wrapper around Model Driven Health Tools libraries<ul style="list-style-type: none">✓ Does schema validation for C32✓ Does schema and schematron validation for C-CDA✓ Returns the validation results from MDHT in the response• Used directly by the Document Segmentation Service to validate the document before and after the segmentation
Value Set Service	<ul style="list-style-type: none">• Manages sensitive categories, code systems, value sets, and etc.• Provides RESTful service to map coded concepts to sensitive categories• Provides the list of all sensitive categories available in the system

Technical Overview: Supporting Infrastructure Services

Configuration Server	<p>Provides support for externalized configuration, including:</p> <ul style="list-style-type: none">✓ Consent2Share UI and UI API✓ Edge Server✓ Patient Consent Management Service✓ Provider Lookup Service✓ Value Set Service
Discovery Server	<ul style="list-style-type: none">• Facilitates microservices to dynamically discover each other• Promotes scalability<ul style="list-style-type: none">✓ Provides registry of Consent2Share service instances✓ Provides a means for service instances to register, de-register, and query instances with the registry✓ Provides registry propagation to other microservice (Eureka client) and Discovery Server (Eureka server cluster) instances
Edge Server	<ul style="list-style-type: none">• Serves as gatekeeper to the outside world• Keeps unauthorized external requests from passing through• Uses Spring Cloud Zuul as a routing framework

Technical Overview: Third-party Services

Cloud Foundry User Account and Authentication Server	<p>For authentication, authorization, issuing tokens for client applications, and user account management</p> <p>Implements OAuth2, OpenID Connect, JSON Web Token (JWT), and SCIM specifications</p>
JBoss Drools Guvnor	A user interface and a versioned repository for business rules used by the Business Rule Management System
HL7 Application Programming Interface (HAPI) FHIR	A Java API for HL7 FHIR clients and servers

Section Three: Technical and Organizational Considerations



Technical Specifications

- Linux or Windows
- Supports Java and other open source technologies
- Uses standard API technologies
- Capable of sending and receiving Continuity of Care Documents, including C-CDAs
- Can integrate with FHIR servers and/or IHE profiles



Technical Functionalities

- Integrate third-party solutions with HIEs, EHRs, or FHIR
 - ✓ To support interoperable health record use in accordance with federal and state laws
- Provide data exchanges that conform to relevant standards
 - ✓ DS4P, HL7 Standards, etc.
- Provide Virtual Private Network for remote connectivity
 - ✓ E.g., between Consent2Share and HIE

Organizational Specifications

- SMEs to evaluate value sets that are linked to Consent2Share sensitive categories
- Staff to finalize the definitions of sensitive data value sets from standard medical terminologies
- Process for developing new policies, procedures, and workflows for capturing patient consent that complies with state and federal laws
- Staff to teach patients how to use Consent2Share
- Patients need computers and email addresses to manage consents



Other Considerations

- Identify the necessary stakeholders
 - ✓ HIE, HIE technology vendor, provider organizations, EHR vendors, etc.
- Assess initial infrastructure and long-term maintenance costs
 - ✓ Technical, operational, marketing, legal, etc.
- Consider incorporating Consent2Share into existing clinical workflows
- Provide patient training and develop patient materials:
 - ✓ Value of consent management
 - ✓ How to use the system
 - ✓ How it protects privacy and security
- Patients need access to computers or tablets

Section Four: Obtaining Consent2Share



Consent2Share Project Websites

GitHub Project Site: <https://bhits.github.io/consent2share/>

GitHub Umbrella Repository

- <https://github.com/bhits/consent2share>
 - ✓ Releases and links to microservice repositories
 - ✓ Documentation (development and deployment guides, etc.)

GitHub README Files

- <https://github.com/bhits/{microservice-repo}#readme>

DockerHub

- <https://hub.docker.com/u/bhits/>

Welcome to Consent2Share (C2S) on GitHub!

Announcements & News!

Current Release (Version 3.5.0)

Recent News!

SAMHSA releases Version 3.5.0 on GitHub!

New to Consent2Share?

Consent2Share is an open source software application that allows patients to determine, through an online consent process, which health information they would like to share and not share with their primary and specialty health care providers.

- Developed to meet the need for patients to have meaningful choices to share their protected behavioral healthcare information
- Integrates with existing electronic health record (EHR) and health information exchange (HIE) systems using interoperability standards
- Supports federal and state requirements related to protected health information, such as 42 CFR Part 2
- Puts control of health information exchange in the hands the person who has the right to decide who has access to his or her data: the patient.



Terminology

A glossary of acronyms, terms, and their definitions that are used frequently in the Consent2Share application project.



Security and Privacy

Information regarding security measures used while implementing the Consent2Share application.



Implementer Support

Important technical information that supports the implementation of the Consent2Share application.



Documentation

Technical and non-technical documentation for users who wish to implement the Consent2Share application.



Financial

Estimates of the financial and human resources required to implement Consent2Share aligned with key milestones and time requirements.



Use Cases

Illustrates how patients can use Consent2Share to selectively share protected health information and adhere to 42 CFR Part 2 confidentiality regulations.

Terminology Page



Terminology

A glossary of acronyms, terms, and their definitions that are used frequently in the Consent2Share application project

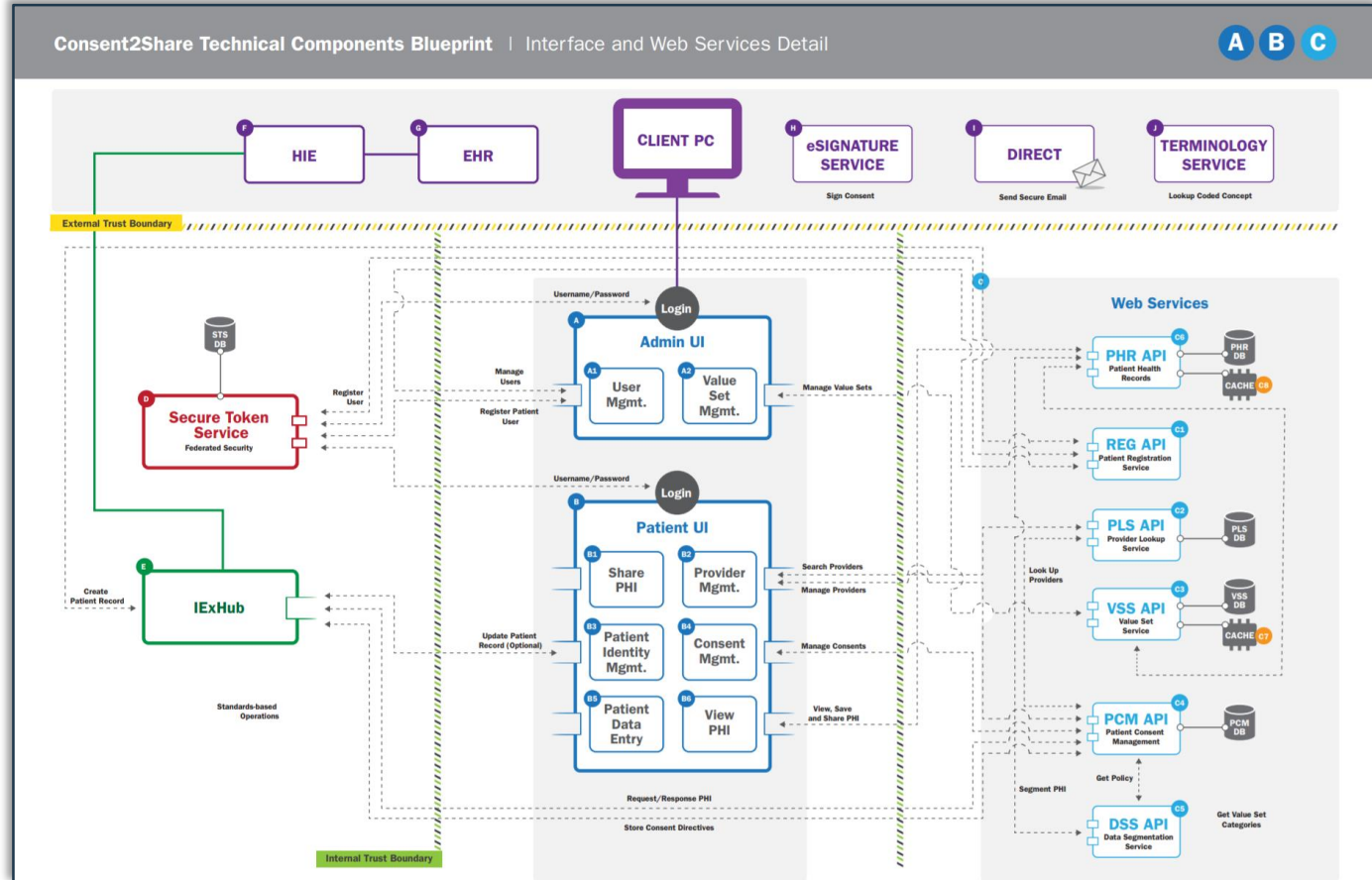
Terminology	
Security and Privacy	
Implementer Support	
Current Release	
A glossary of acronyms, terms, and their definitions that are used frequently in the Consent2Share application project.	
42 CFR Part 2	42 CFR Part 2 (commonly referred to as "Part 2") are the federal regulations governing the confidentiality of drug and alcohol abuse treatment and prevention records
C32	A C32 is a type of Continuity of Care Document (CCD) which focuses on the patient's summary information. The data is extracted from RPMS. The demographic data and patient identity are confirmed through the MPI. Then the C32 document is put into the Registry and Repository.
C-CDA	Consolidated Clinical Document Architecture (C-CDA) is a complete architecture used to create documents and template methodologies for those documents. The primary function of the C-CDA is to standardize the content and structure for clinical care summaries. Templates are set at three levels – Document level, Section level and Entry level.
Consent Mgmt.	A module used to create and manage consent policies that determine the level of privacy applied to the patient's health record when it is shared between providers and/or patients and providers
CTX API	The Context Handler (CTX) API makes decisions based on the consent policy
Direct	A standards-based system component used for secure email communication and transactions between providers, patients and health care organizations
Docker	An open-source program that enables a Linux application and its dependencies to be packaged as a container
DSS API	The Data Segmentation Service (DSS) API handles the segmentation of a patient's sensitive health information per their consent. BRMS service is included in DSS
EHR	The system component that providers use to manage a patient's health records and where patient health data will originate
FHIR	Fast Healthcare Interoperability Resources (FHIR) and pronounced as "Fire," defines a set of "Resources" that represent granular clinical concepts. The Resources can be managed in isolation, or aggregated into complex documents. Technically, FHIR is designed for the web. The Resources are based on simple XML or JSON structures, with an http-based RESTful protocol where each Resource has predictable URL. Where possible, open internet standards are used for data representation.

Security and Privacy Page



Security and Privacy

Information regarding security measures used while implementing the Consent2Share application



Implementer Support Page



Implementer Support

Important technical information that supports the implementation of the Consent2Share application

The screenshot shows a web page titled "Implementer Support" with a blue header. Below the header is a navigation menu with four items: "Terminology", "Security and Privacy", "Implementer Support" (which is highlighted in blue), and "Current Release". Below the menu is a paragraph of text: "Important technical information that supports the implementation of the Consent2Share application." followed by a horizontal line. Underneath the line are three links, each with a document icon: "C2S Technical Blueprint", "C2S Read Me Information", and "C2S Software Licensing Agreement".

Documentation Page



Documentation

Technical and non-technical documentation for users who wish to implement Consent2Share

A screenshot of a web page titled "User Guides". The page has a blue header with a document icon and the text "User Guides". Below the header is a blue bar with "User Guides" and a white box with "Additional Documentation". The main content area contains a paragraph about user guides for developers and patients, followed by a section for "Release - Version 3.4.0 (Current Release)" with a list of links to various user guides. Below that is a section for "Release - Version 3.3.0" with a list of links to various user guides.

User Guides

User Guides

Additional Documentation

The following includes a user guide for developers seeking to implement Consent2Share and a Patient User Guide to help patients navigate and use Consent2Share.

Release - Version 3.4.0 (Current Release)

- [C2S Master User Guide](#)
- [C2S Provider User Guide](#)
- [C2S Staff User Guide](#)
- [C2S Patient User Guide](#)
- [C2S Deployment Guide](#)
- [C2S Development Guide](#)

Release - Version 3.3.0

- [C2S Provider User Guide](#)
- [C2S Staff User Guide](#)
- [C2S Patient User Guide](#)
- [C2S Deployment Guide](#)



Financial

Estimates of the financial and technical resources required to implement Consent2Share aligned with key milestones and time requirements

Consent2Share Sample Project Plan

Milestone	Description	Months Of Duration	Estimated Cost	Comments
1	Stakeholder Education, Standards, and Approach	1	25K	Should be done as part of overall implementation plan
2	Implementation Plan Development	1	25K	Should be done when designing stakeholder education
3	Patient Identification Integration	2-4	100K	This is work to integrate Consent2Share to the EHR/HIE
4	Patient Registration Enhancements	1	15K	This is work required to make small modifications to patient registration based on patient identification integration work
5	Deployment of Consent2Share micro services (API) applications	6-9	400k	This work is the deployment of the Consent2Share application inclusive of IExHub
6	Finalize Consent2Share Value Set Extensions	2-4	25K	This work is to finalize the Consent2Share value sets stored in Value Set Authority Center (VSAC)
7	Prepare Education Materials, Programs, and Baseline Patient Workflow	1-3	25K	This work is to put together education materials for new users of Consent2Share. This is the outcome of milestone 1
8	OTP Patient Data Sharing Implementation	1-3 (per practice)	10k (per practice)	This work is associated with working to connect behavioral health facilities to EHR/HIEs

Note: This project plan is provided as a general guide but may not be reflective of an installation at your specific facility/environment.



Use Case

Illustrates how patients can use Consent2Share to selectively share protected health information and adhere to 42 CFR Part 2 confidentiality regulations

Use Case: Sally Share

Sally

Sally uses the online consent management application Consent2Share to give her Maryland OTP an advanced authorization to share her addiction treatment records with the California OTP.

Her methadone treatment will continue uninterrupted.

Electronic Consent

Out-of-State OTP

Obtaining Consent2Share

Current Release

- Terminology
- Security and Privacy
- Implementer Support
- Current Release**

Use the link below to access the most current release version of Consent2Share residing on the BHITS Consent2Share File Repository.

Current Release - Version 3.5.0

Release Date - This version was released on 11/09/2017.

[Download C2S V3.5.0 from the C2S GitHub File Repository](#)

Previous Releases

Release - Version 3.4.0

Release Date - This version was released on 09/18/2017.

[Download C2S V3.4.0 from the C2S GitHub File Repository](#)

Release - Version 3.3.0

Release Date - This version was released on 08/07/2017.

[Download C2S V3.3.0 from the C2S GitHub File Repository](#)

Release - Version 3.2.0

Release Date - This version was released on 06/27/2017.

[Download C2S V3.2.0 from the C2S GitHub File Repository](#)



Features Business Explore Marketplace Pricing This repository Search

bhits / consent2share Watch 13

Code Issues 21 Pull requests 0 Insights

Releases Tags

Latest release

3.5.0
aa31118

mingfan released this on Nov 13, 2017

Consent2Share 3.5.0 (2017-11-09)

Assets

- [Source code \(zip\)](#)
- [Source code \(tar.gz\)](#)

Features

- The user can select multiple providers as "FROM" or "TO" to share data by c
- The user is reminded of PII constraints with a notice of disclosure when wor
- The provider can view the segmented CCD document as an HTML page in a to download it as a XML document.
- The IExHub API is implemented to support FHIR to update the patient profil by Patient ID.
- An Angular UI Component Library is created for Consent2Share Shared Com
- Values set data are synchronized with VSAC.
- The UI link is decoupled from edge server configuration.
- The log is aggregated and correlated across microservices.
- Third-party libraries are upgraded to fix critical security issues.
- CloudFoundry User Account and Authentication (UAA) Server is upgraded to

Documentation Updates

README.md files in repositories are updated.

NOTES:


Consent2Share 3.5.0 release includes:

- Consent2Share UI 0.8.0: <https://github.com/bhits/c2s-ui/releases/tag/0.8.0>
- Consent2Share UI API 0.8.0: <https://github.com/bhits/c2s-ui-api/releases/ta>
- Configuration Server 0.5.0: <https://github.com/bhits/config-server/releases/>
- Context Handler 2.5.0: <https://github.com/bhits/context-handler/releases/ta>



Two Options to Run Consent2Share

A. Download source code and manually build the project

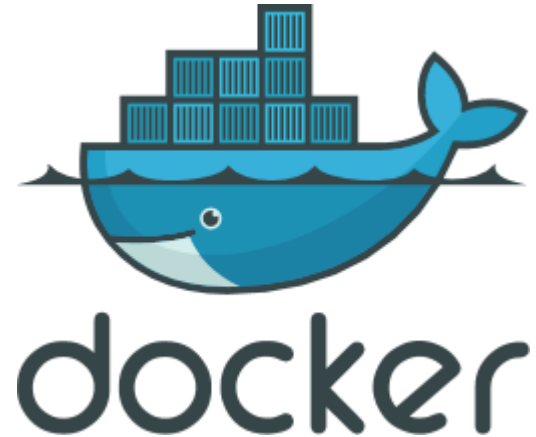
Consent2Share 3.5.0 (2017-11-09)

 mingfan released this on Nov 13, 2017

Assets

-  [Source code \(zip\)](#)
-  [Source code \(tar.gz\)](#)

B. Deploy and run using Docker



Select Edition



**HIE
Edition**

**Manual
Edition**

Option 1: Download Option

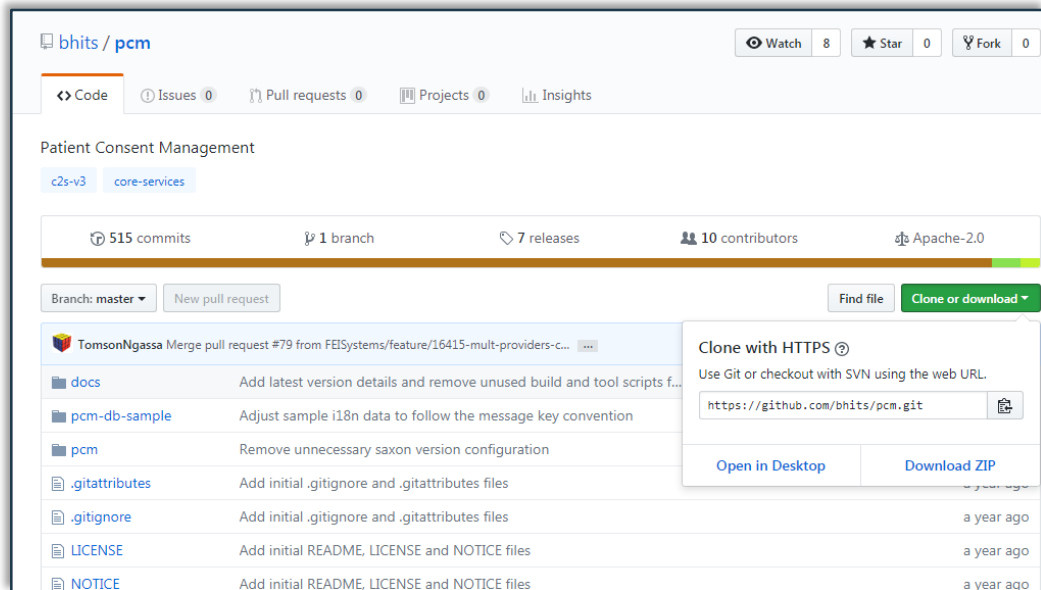
1. Setup your local development environment

2. Download source code from GitHub

```
$ git clone https://github.com/bhits/pcm.git
```

```
$ cd pcm/
```

```
$ git checkout 1.24.0
```



Option 1: Download Option, Continued

3. Modify code for your program needs

4. Build and run application locally

```
$ mvnw clean install
```

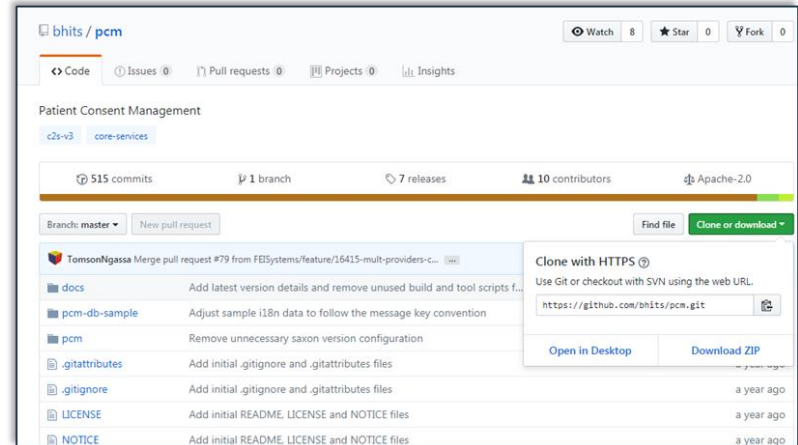
✓ Run as Docker container

```
$ mvnw clean install docker:build
```

5. Deploy and Run Consent2Share

```
$ java -jar pcm-x.x.x-SNAPSHOT.jar
```

```
$ docker run -d bhits/pcm:latest
```



Option 2: Configure and Run Using Docker

➤ Reference the Development and Deployment Guides

1. Setup your local/server environment

- ✓ Install Docker and Docker Compose

```
$ sh c2s_docker_install.sh
```

2. Configure your local/server environment

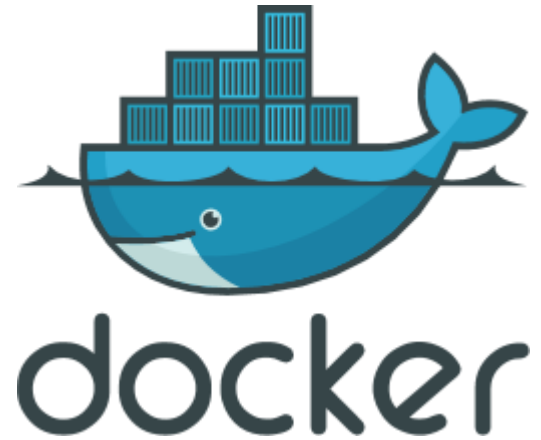
```
$ sh c2s_config.sh
```

3. Select configuration option for environment

```
$ sh c2s_config.sh
This script is used to setup server configuration for Consent2Share.
1. EHR Edition App Server
2. EHR Edition DB Server
3. EHR Edition FHIR Server
4. HIE Edition App Server
5. HIE Edition Db Server
6. HIE Edition Hieos Server
Please select a server to setup:1
```

4. Use Docker Compose to run Consent2Share

```
$ docker-compose up -d
```



Welcome to Consent2Share (C2S) on GitHub!

Announcements & News!

Current Release (Version 3.5.0)

Recent News!

SAMHSA releases Version 3.5.0 on GitHub!

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Use Cases

Illustrates how patients can use Consent2Share to selectively share protected health information and adhere to 42 CFR Part 2 confidentiality regulations.

For More Information



Contact Us

Additional Resources

HealthIT.gov (ONC)

The Office of the National Coordinator
for Health Information Technology
(ONC)

Contact Information

SAMHSA Headquarters

Substance Abuse and Mental Health Services Administration
5600 Fishers Lane, Rockville, MD 20857

Mailing Addresses

U.S. Postal Service Delivery
Substance Abuse and Mental Health Services Administration
5600 Fishers Lane, Rockville, MD 20857

Overnight Delivery (FedEx, UPS, Airborne Express, DHL, etc.)
Substance Abuse and Mental Health Services Administration
5600 Fishers Lane, Rockville, MD 20857

Email Address

✉ [SAMHSA Health IT Team](#)

For additional information, visit the [SAMHSA Health Information Technology](#) webpage.

Technical Questions



If you have technical questions about Consent2Share, please email us at samhsa.hit@samhsa.hhs.gov