



#BETTERGLOBALHEALTH



HAPI FHIR 5.4.0

Smile CDR 2021.05.R01

Pangolin Release Webinar

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HAPI FHIR



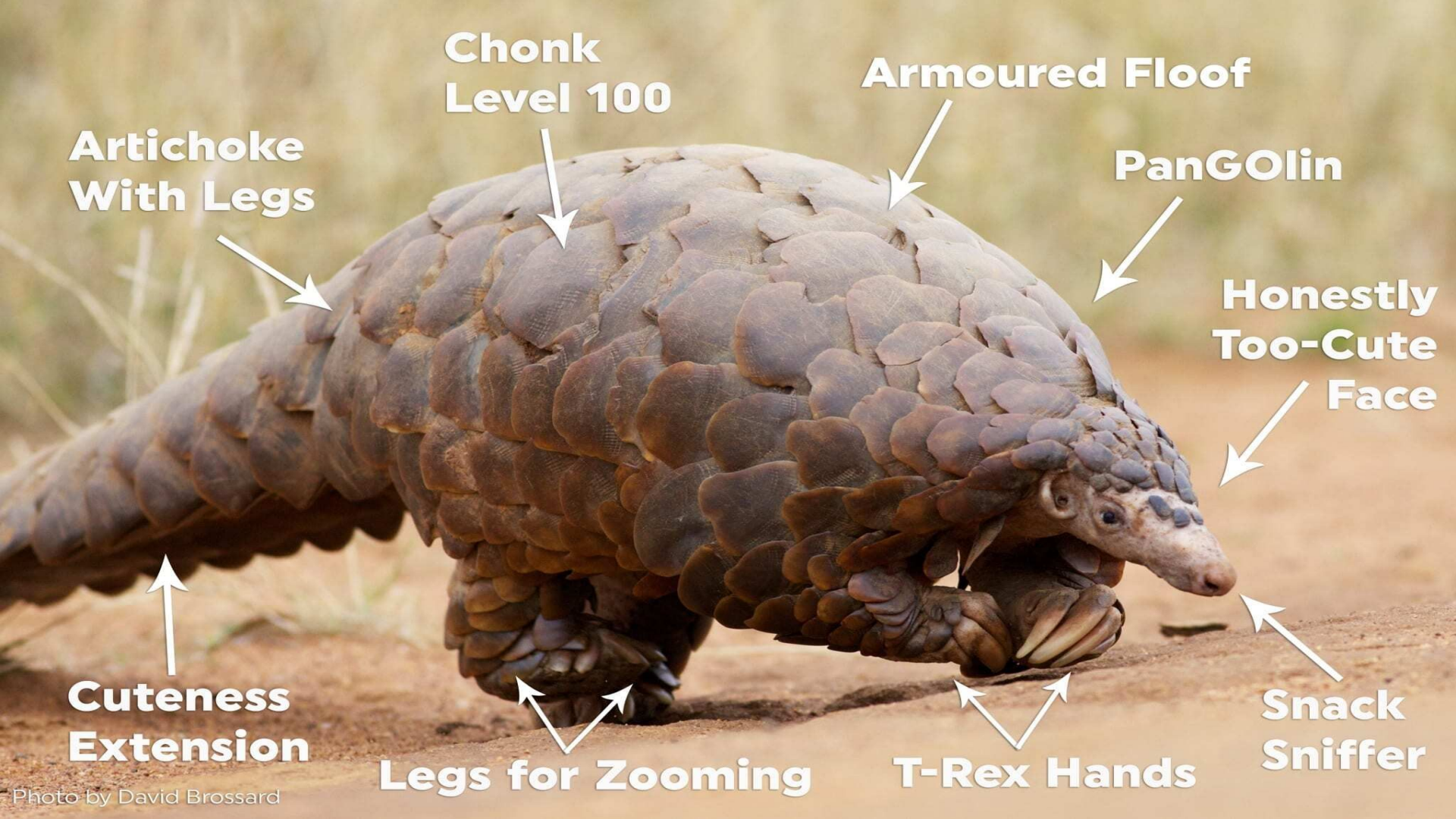
Today's Agenda:

- What's New
- What's Coming
- Q&A

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What's a pangolin?



**Chonk
Level 100**

Armoured Floof

**Artichoke
With Legs**

PanGOlin

**Honestly
Too-Cute
Face**

**Cuteness
Extension**

Legs for Zooming

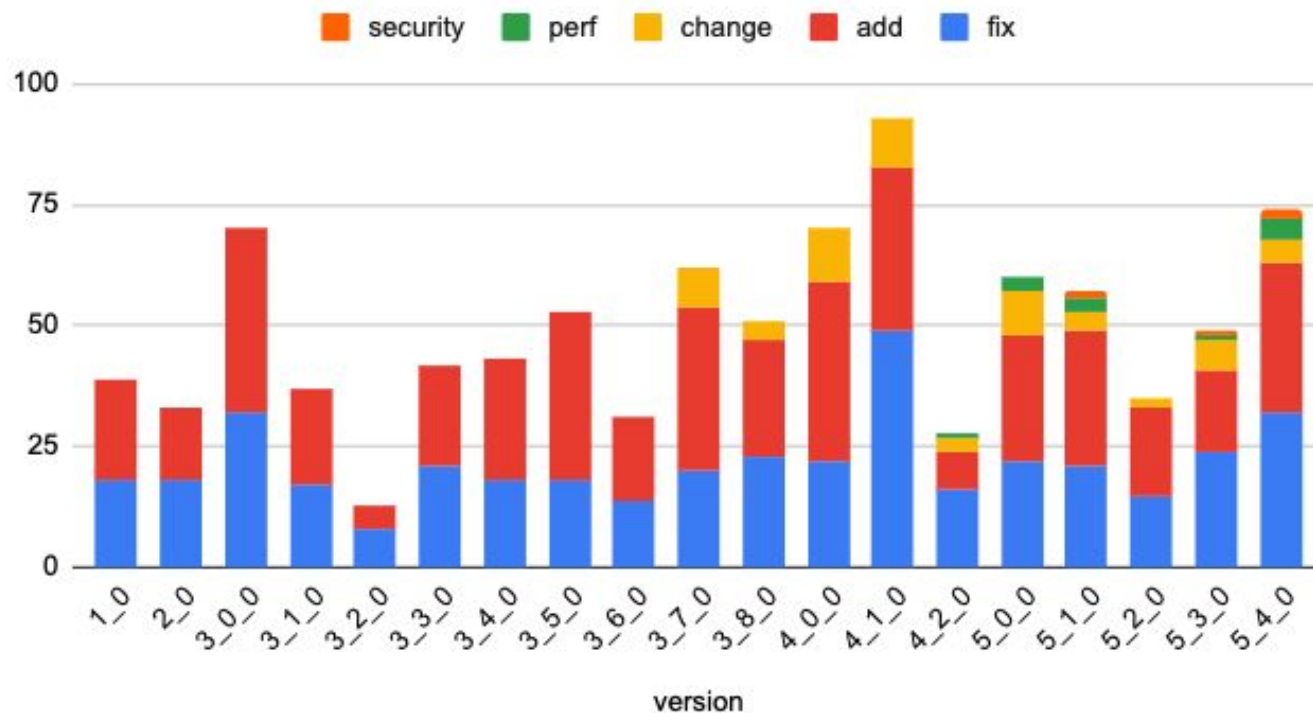
T-Rex Hands

**Snack
Sniffer**

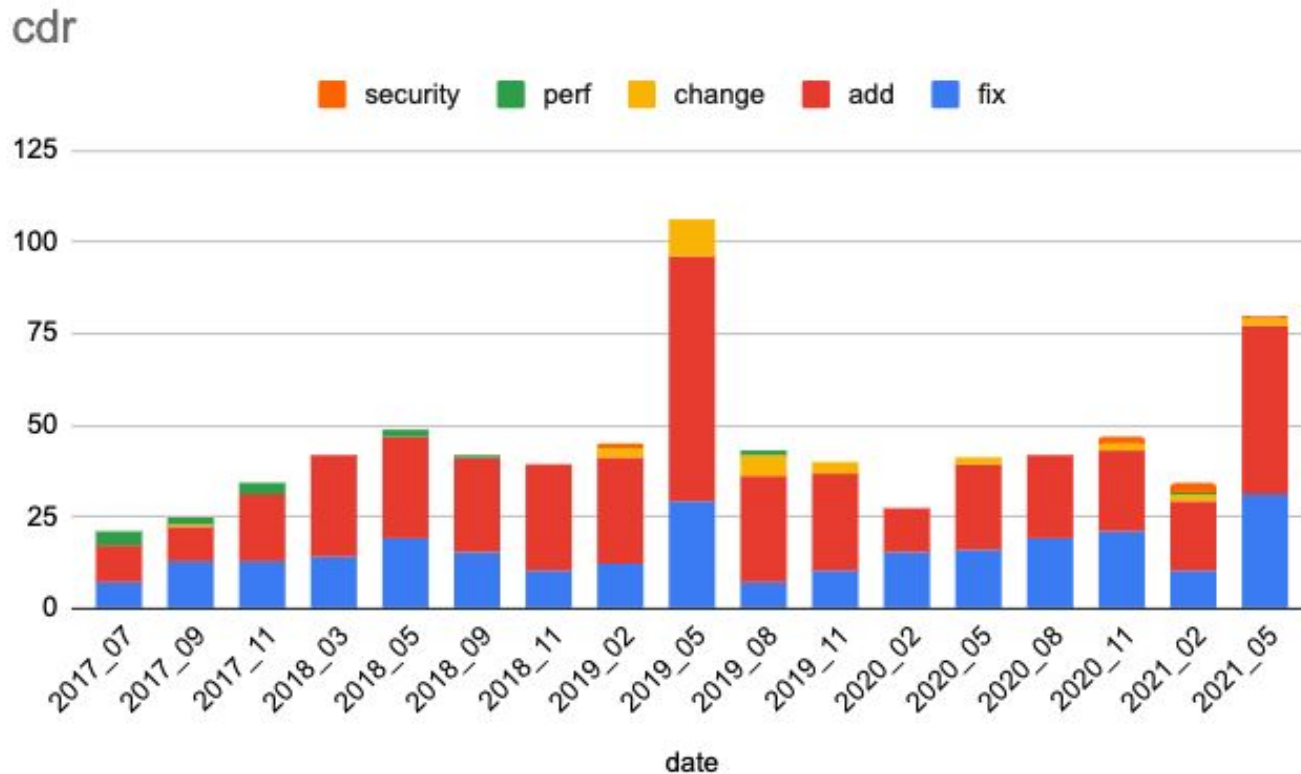
Pangolin: New and Noteworthy

Changes over time: HAPI FHIR

hapi



Changes over time: Smile CDR



The Takeaway



- This release features a huge number of small enhancements
- See the changelogs for all the details:

<https://smilecdr.com/docs/introduction/changelog.html>

<https://hapifhir.io/hapi-fhir/docs/introduction/changelog.html>

Resource Exhaustion Vulnerability Fixed



- An inefficient SQL count query can result in concurrent _history calls exhausting the database connection pool making system unavailable
- A loading-cache layer has been added to mitigate this risk in Pangolin
- Reported as CVE-2021-32053. Thanks to Zachary Minneker at Security Innovation for reporting!

MDM Enhancements



- The MDM module now supports **survivorship rules**, which allow the automatic creation of a "**Golden Record**" containing the best known attributes across linked records
- FHIRPath rules, numeric matchers, and extension matchers have been added

MDM Enhancements (2)



- New MDM match syntax:

`Observation?patient:mdm=Patient/123`

- MDM-aware Group Export

Partitioning Enhancements

- Reindexing now supported on partitioned servers
- Bulk Export now supported on partitioned servers



Ingestion Enhancements



HAPI FHIR

- **Channel Import** (Kafka) pipeline now supports Transaction Bundles as a payload format
- **ETL Module** now adds an Asynchronous mode for background execution across the cluster

HL7 v2.x Enhancements



Inbound:

- ***VXU (Vaccines)*** inbound support has been added
- ***ORM (General Order)*** inbound support has been added
- ***SIU (Scheduling)*** inbound support has been added

Outbound:

- ***Outbound General ADT Mode*** (sends the right message for the right change) has been added

Bulk Data Enhancements



- ***Bulk Patient Export*** has been added
- ***Bulk Group Export*** has been added
- Framework changes to support bulk import have been completed (but general bulk \$import is not yet complete)

OpenAPI / Swagger



- Support for OpenAPI (aka Swagger) has finally landed!

The screenshot shows the 'HAPI FHIR Test/Demo Server R4 Endpoint' page. It features a header with a cat logo and the text 'HAPI FHIR Server 5.0.0-PR1-9M4P9C7388883331-05-19'. Below the header, there are links for 'FHIR Server Base URL', 'OpenAPI Docs', and 'FHIR Version'. A table at the bottom lists various FHIR resources and their counts, such as 'Patient 169698', 'Encounter 95035', and 'QuestionnaireResponse 82333'.

HAPI FHIR Test/Demo Server R4 Endpoint
HAPI FHIR Server 5.0.0-PR1-9M4P9C7388883331-05-19

FHIR Server Base URL <http://hapi.fhir.org/baseR4>
OpenAPI Docs <http://hapi.fhir.org/baseR4/api-docs>
FHIR Version 4.0.1 (R4)

This server is Open Source Software, licensed under the terms of the [Apache Software License 2.0](#).

All	System Level Operations	Observation 849309	Patient 169698	Encounter 95035	QuestionnaireResponse 82333	Claim 70543	Co
MedicationStatement 43841	Location 39445	Immunization 38780	ExplanationOfBenefit 37921	DiagnosticReport 37786	Practitioner 34744		
MessageHeader 2799	Appointment 26850	Coverage 26509	Organization 23921	Procedure 22807	Slot 21698	Schedule 21224	Ci
MedicationRequest 18106	AuditEvent 12597	PractitionerRole 9772	Binary 9259	AllergyIntolerance 7184	List 6668	Device 6347	Me
CarePlan 5869	Provenance 4623	CareTeam 4545	Bundle 4290	ServiceRequest 3233	ImagingStudy 2925	Specimen 2902	Goal 2
Endpoint 2439	ImmunizationRecommendation 2219	Media 2191	MedicationAdministration 2046	RelatedPerson 1875	Task 1564	Value	
Questionnaire 1417	CodeSystem 1389	Communication 1397	EpisodeOfCare 1387	StructureDefinition 1374	BodyStructure 1193	Mole	
Subscription 905	Composition 852	CommunicationRequest 798	MedicationKnowledge 733	Account 694	Person 670	Basic 655	f
Group 594	AppointmentResponse 590	FamilyMemberHistory 545	ImmunizationEvaluation 487	ClinicalImpression 456	Consent 424		

The screenshot shows the 'Patient' resource page in a FHIR API explorer. It lists various HTTP methods and their corresponding endpoints and descriptions.

Patient The Patient FHIR resource type

- GET** `/Patient/{id}` read-instance: Read Patient instance
- PUT** `/Patient/{id}` update-instance: Update an existing Patient instance, or create using a client-assigned ID
- DELETE** `/Patient/{id}` instance-delete: Perform a logical delete on a resource instance
- PATCH** `/Patient/{id}` instance-patch: Patch a resource instance of type Patient by ID
- GET** `/Patient/{id}/_history/{version_id}` vread-instance: Read Patient instance with specific version
- GET** `/Patient` search-type: Update an existing Patient instance, or create using a client-assigned ID
- POST** `/Patient` create-type: Create a new Patient instance
- GET** `/Patient/_history` type-history: Fetch the resource change history for all resources of type Patient
- GET** `/Patient/{id}/_history` instance-history: Fetch the resource change history for all resources of type Patient
- GET** `/Patient/$everything`
- GET** `/Patient/{id}/$everything`
- POST** `/Patient/$expunge`
- POST** `/Patient/{id}/$expunge`

Search Enhancements



- Support for searching contained resources has been added
- Support for the `_list` search parameter has been added

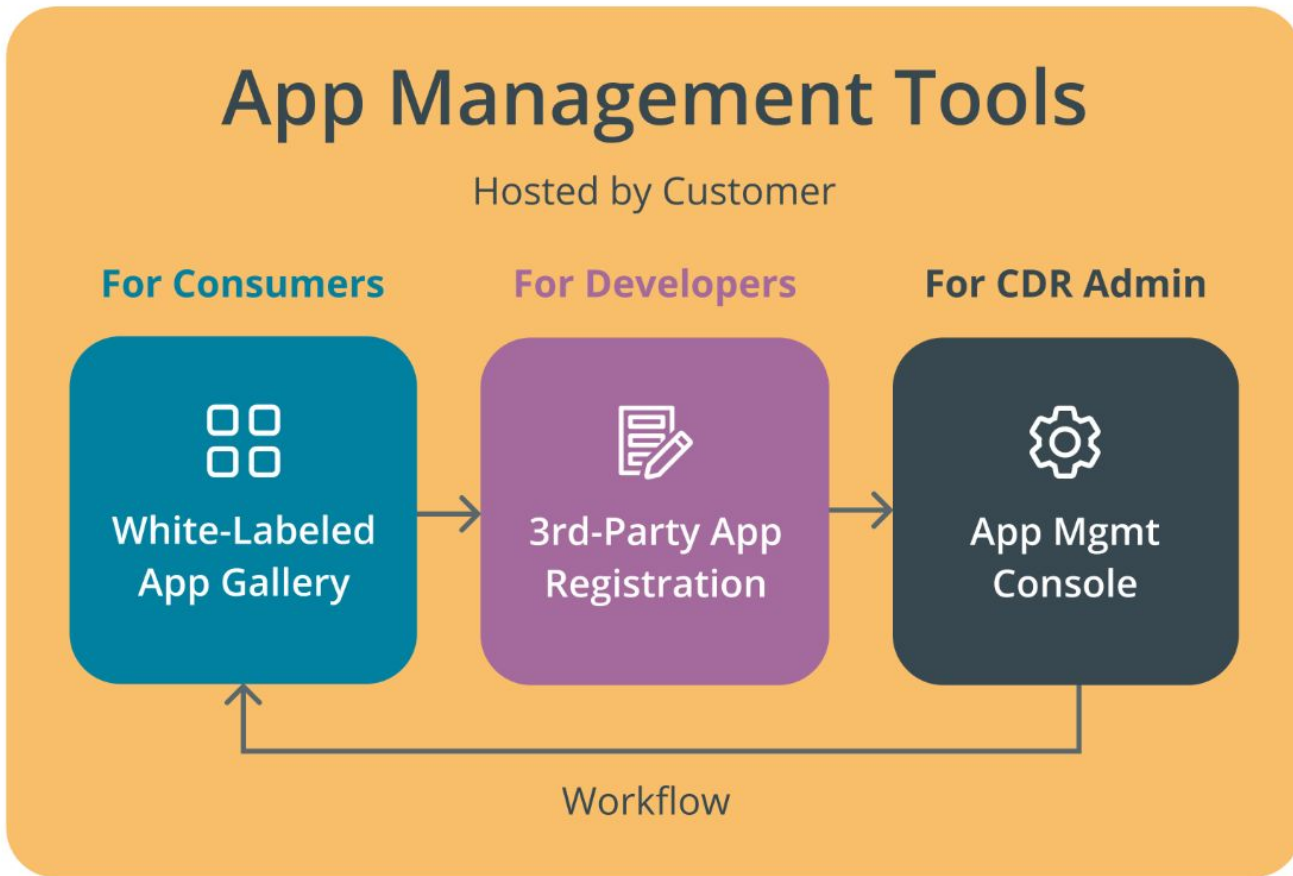
Terminology Enhancements



- ValueSet Expansion can now return code hierarchy
- Improved support for not failing on unknown CodeSystems



New Smile CDR Feature: App Management Tools



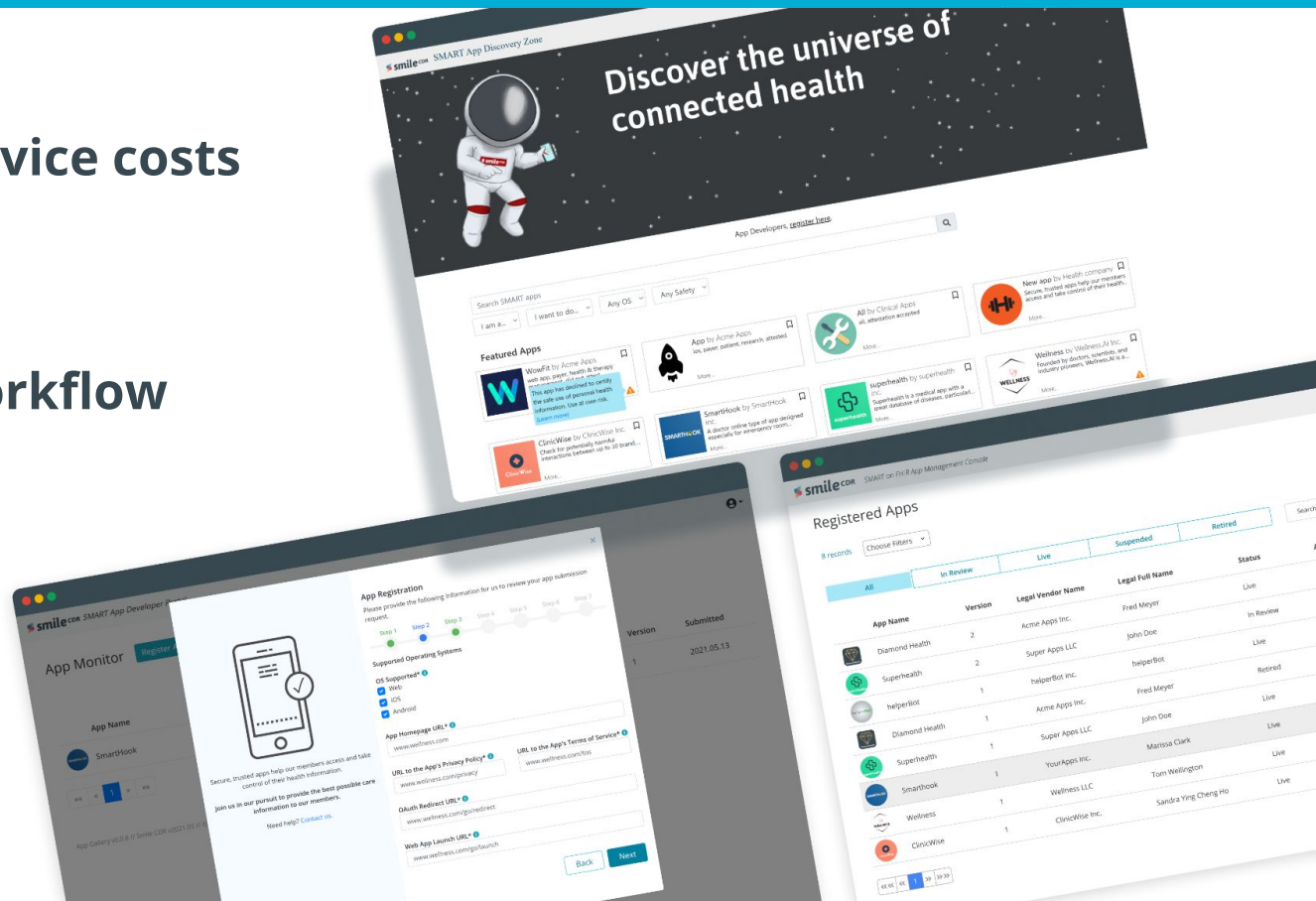
App Management Benefits



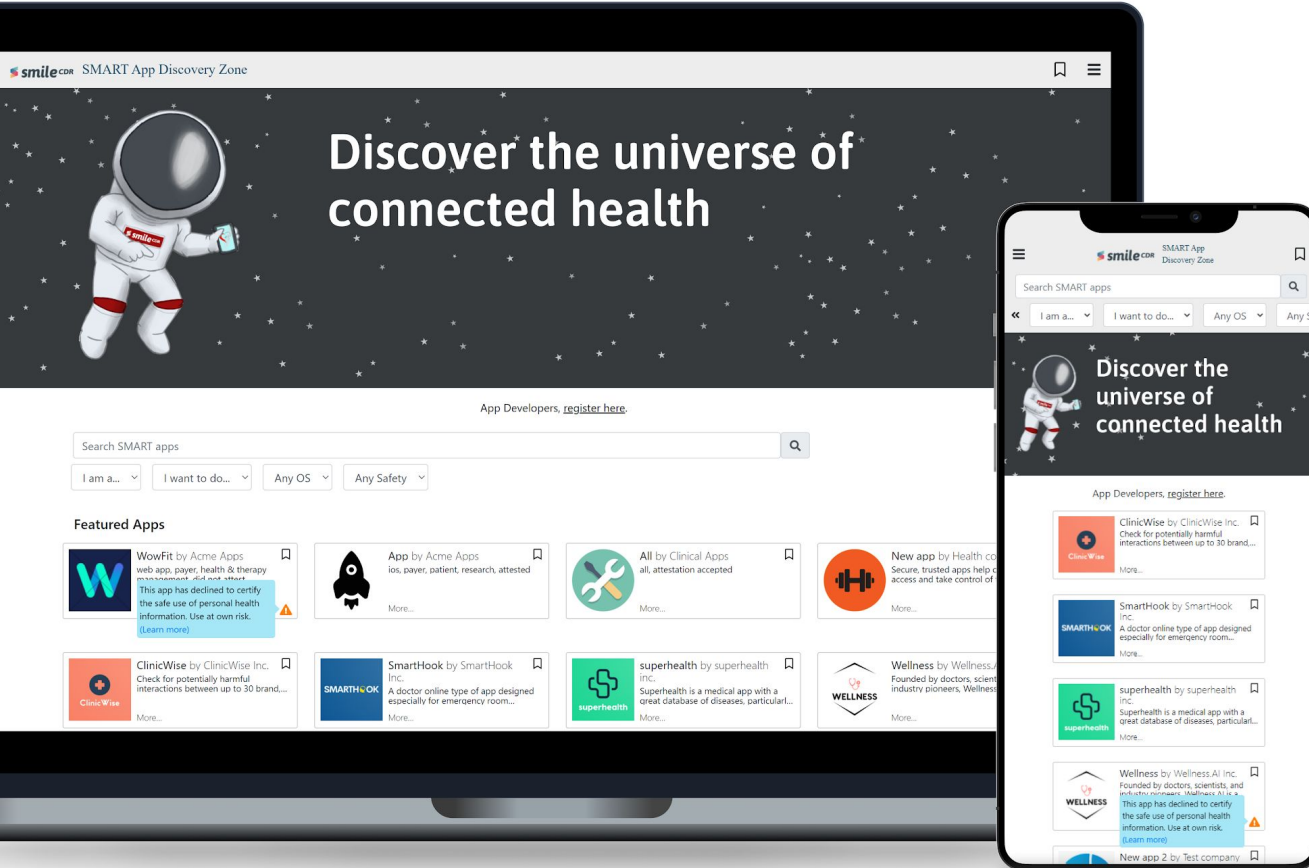
Reduce customer service costs

Engage developers

Efficient approval workflow

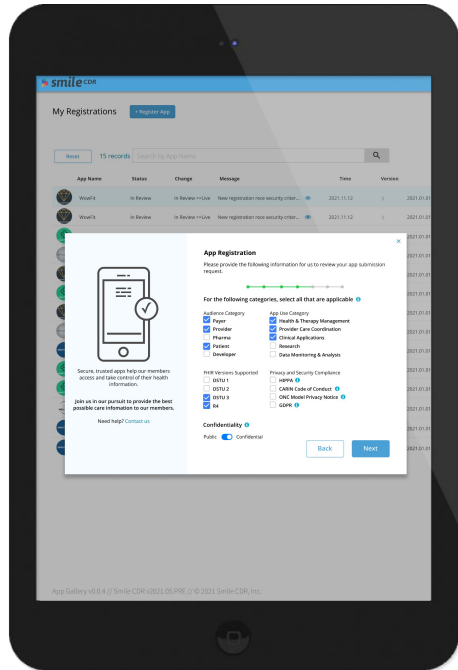


White-labeled App Gallery

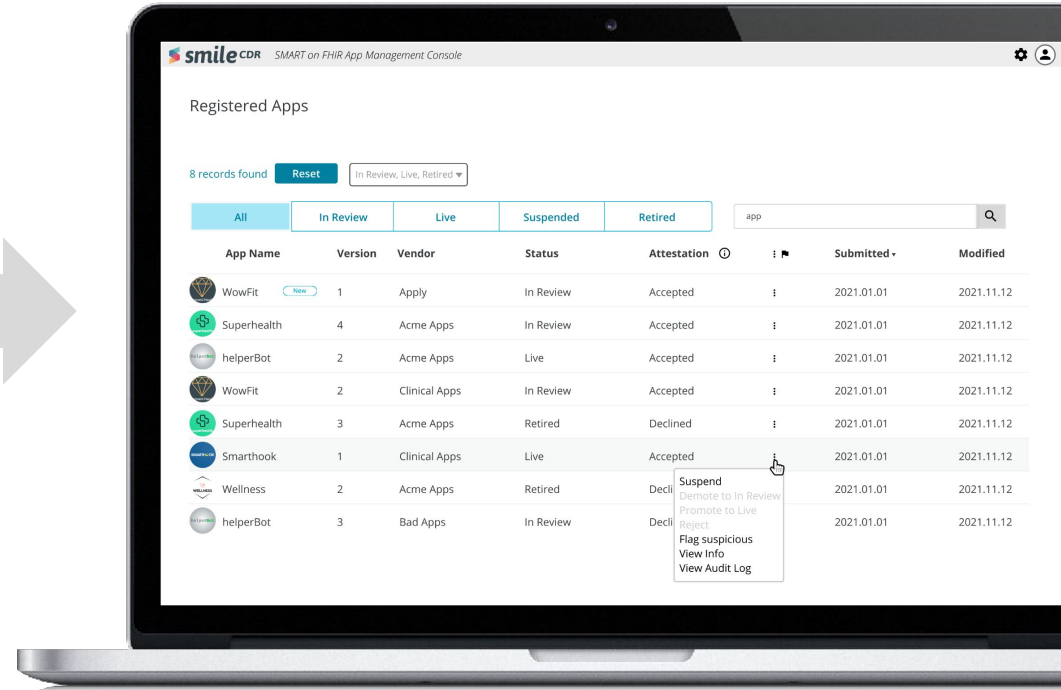


- Auto-updates with approved apps
- Links to developer & app registration
- Mobile-responsive
- Content & brand customizability

Developer Portal



App Management Console





What's Next?

Coming Up This Quarter



HAPI FHIR

- A point release (5.4.1 / 2021.05.R02) is scheduled in roughly 1 month in order to accommodate July 1 "Final Rule" Enforcement Date
- CDA/CCD Import/Export enhancements
- Ongoing Gateway work

JDK Updates



- **Already:** HAPI FHIR and Smile CDR support JDK 8 and JDK 11
- **New:** HAPI FHIR 5.4.0 now supports JDK 16
- **Next:** Smile CDR 2021.08.R01 will add support for JDK 16
- **Under Consideration:** We may begin dropping support for JDK 8 in a future release. Please get in touch if you have concerns.

Q & A