



**December 2017**

# What is the Argonaut Project?

The Argonaut Project is an **implementation community** comprising leading technology vendors and provider organizations to **accelerate the use of FHIR** and OAuth in health care information exchange.

## We are:

- Private sector initiated and funded
- Working collaboratively with other FHIR initiatives such as SMART-on-FHIR, the Health Systems Platform Consortium, and the FHIR Foundation
- Creating open industry Implementation Guides in high priority use cases of importance to patients, providers and the industry as a whole

## We are NOT:

- A company
- A standards development organization
- A proprietary activity

# Who's Behind the Argonaut Project?

| Technology Vendors         | Provider Organizations               |
|----------------------------|--------------------------------------|
| Accenture                  | Beth Israel Deaconess Medical Center |
| Athenahealth               | Intermountain Health                 |
| Cerner                     | Mayo Clinic                          |
| Epic                       | Partners Healthcare                  |
| McKesson                   | SMART at Boston Children's Hospital  |
| MEDITECH                   |                                      |
| Surescripts                |                                      |
| The Advisory Board Company |                                      |

## Staff (current and past)

Prime contractor: HL7

FHIR initiatives: Grahame Grieve, Josh Mandel, Brett Marquard, Eric Haas

OAuth initiatives: Dixie Baker, Josh Mandel

Project Management: Micky Tripathi, Jennifer Monahan

# Why do we need the Argonaut Project to accelerate FHIR?

**Standards development process, by design, values comprehensiveness over speed-to-market**

**Market input is needed to make standards relevant and usable**

- Identification of priority use cases to meet market needs
- Development of well-packaged implementation guides
- Facilitation of testing and implementation community
- Coupling with other standards or protocols needed for implementation (e.g., security)

**Implementers need to have greater input (i.e., deeper, earlier) into standards development**

**Need to get as much collaboration as early as possible in the cycle to head off problems of heterogeneous implementations down the road**

# Data and Document Access Implementation Guide

**Argonaut Data Query Implementation Guide Version 1.0.0**

Home General Guidance Profiles Extensions ValueSets Operations Search Parameters Conformance Downloads

This is the current officially published version of *The Argonaut Data Query Implementation Guide* Version 1.0.0. For list of available versions, see the [Directory of published versions](#)

## Argonaut Data Query Implementation Guide

The Argonaut Data Query Implementation Guide is based upon the core [FHIR DSTU2 API](#) and it documents:

- Security and Authorization
- Data element query of the ONC Common Clinical Data Set
- Document query of static documents

### Use Cases

This specification describes four use cases and sets search expectations for each. For complete details and background, see [Use Cases](#) for the Argonaut Project.

1. Patient uses provider-approved web application to access health data
2. Patient uses provider-approved mobile app to access health data
3. Clinician uses provider-approved web application to access health data
4. Clinician uses provider-approved mobile app to access health data

Note, the Common MU Data Set referenced in the Use Cases is now the ONC 2015 Common Clinical Data Set .

### Security

Argonaut uses SMART on FHIR authorization for apps that connect to EHR data. For details, see [SMART on FHIR Authorization Guide](#) and the [Argonaut Sprint Definitions](#).

### Data Element Query

The Argonaut data element query IG is intended to meet the 2015 Edition certification criterion for Patient Selection 170.315(g)(7) and Application Access – Data Category Request 170.315(n)(8). They were created for each of the 2015 Edition Common Clinical Data

- Access to individual data elements of *Common Clinical Data Set*
- Access to structured document (CCD) containing all *Common Clinical Data Set* elements
- Leverage OAuth2-based security and authorization
- Based on FHIR STU2

<http://www.fhir.org/guides/argonaut/r2/>

# Provider Directory Implementation Guide

**Argonaut Provider Directory Implementation Guide Version 1.0.0**

Home Guidance Profiles ValueSets Capability Statements Future Work Downloads

## Provider Directory

This is the current officially published version of the Argonaut Provider Directory Implementation Guide Version 1.0.0, based on FHIR Version 3.0.1. See the [Directory of published versions](#).

The Argonaut project Provider Directory guide is based upon the [FHIR STU3 API](#) and contains the foundation for a robust provider directory. It describes the use cases and search expectations for finding a practitioner or organization. It outlines the key data elements for any provider directory and basic query guidance. The components developed in this guide are intended to provide a foundation for a central or distributed Provider or Healthcare Directory. Additional work flow components and elements may be required for a particular implementation.

The requirements for the Argonaut Provider Directory data model were drawn from [IHE Healthcare Provider Directory](#) and the [ONC Provider Directory Workshop](#).

### Use Cases

- Search for Practitioner by demographics
  - Name
  - Specialty
- Search for Practitioner within a region (city, state)
  - Practitioner or specialty within a specified distance - 10 miles from patient home
  - Show me every one of this specialty in the city
- Search for Organization and facility by:
  - Name
  - Address
- Search for Practitioner by organizational relationships
  - Practitioner in a specific health organization (e.g. Baptist Health Organization)
  - Practitioner in a specific clinic (e.g. West Clinic)

### Example Searches

- Locate a Provider's Direct address
  - Search Practitioner by Name or Specialty

- Search for Practitioner by:
  - Demographics
  - Geography
  - Organization relationship
- Search for Organization by:
  - Name
  - Address
- Returns physical and electronic endpoint information
- Based on FHIR STU3

<http://www.fhir.org/guides/argonaut/pd/>

# What do we do? Set Priorities

## 2015 Edition Common Clinical Data Set

|                                  |
|----------------------------------|
| Patient name                     |
| Sex                              |
| Date of birth                    |
| Race                             |
| Ethnicity                        |
| Preferred language               |
| Smoking status                   |
| Problems                         |
| Medications                      |
| Medication allergies             |
| Laboratory tests                 |
| Laboratory results               |
| Vital signs                      |
| Procedures                       |
| Care team members                |
| Immunizations                    |
| Unique Device identifiers        |
| Assessment and Plan of Treatment |
| Goals                            |
| Health concerns                  |



## 93 FHIR DSTU2 Resources (17 Argonaut CCDS Resources in red)

| Clinical                   | Identification    | Workflow             | Infrastructure        | Conformance         | Financial             |
|----------------------------|-------------------|----------------------|-----------------------|---------------------|-----------------------|
| AllergyIntolerance         | Patient           | Encounter            | Questionnaire         | ValueSet            | Coverage              |
| Condition (Problem)        | Practitioner      | EpisodeOfCare        | QuestionnaireResponse | ConceptMap          | EligibilityRequest    |
| Procedure                  | RelatedPerson     | Communication        | Provenance            | NamingSystem        | EligibilityResponse   |
| ClinicalImpression         | Organization      | Flag                 | AuditEvent            | StructureDefinition | EnrollmentRequest     |
| FamilyMemberHistory        | HealthcareService | Appointment          | Composition           | DataElement         | EnrollmentResponse    |
| RiskAssessment             | Group             | AppointmentResponse  | DocumentManifest      | Conformance         | Claim                 |
| DetectedIssue              | Location          | Schedule             | DocumentReference     | OperationDefinition | ClaimResponse         |
| CarePlan                   | Substance         | Slot                 | List                  | SearchParameter     | PaymentNotice         |
| Goal                       | Person            | Order                | Media                 | ImplementationGuide | PaymentReconciliation |
| ReferralRequest            | Contract          | OrderResponse        | Binary                | TestScript          | ExplanationOfBenefit  |
| ProcedureRequest           | Device            | CommunicationRequest | Bundle                |                     |                       |
| NutritionOrder             | DeviceComponent   | DeviceUseRequest     | Basic                 |                     |                       |
| VisionPrescription         | DeviceMetric      | DeviceUseStatement   | MessageHeader         |                     |                       |
| Medication                 |                   | ProcessRequest       | OperationOutcome      |                     |                       |
| MedicationOrder            |                   | ProcessResponse      | Parameters            |                     |                       |
| MedicationAdministration   |                   | SupplyRequest        | Subscription          |                     |                       |
| MedicationDispense         |                   | SupplyDelivery       |                       |                     |                       |
| MedicationStatement        |                   |                      |                       |                     |                       |
| Immunization               |                   |                      |                       |                     |                       |
| ImmunizationRecommendation |                   |                      |                       |                     |                       |
| Observation                |                   |                      |                       |                     |                       |
| DiagnosticReport           |                   |                      |                       |                     |                       |
| DiagnosticOrder            |                   |                      |                       |                     |                       |
| Specimen                   |                   |                      |                       |                     |                       |
| BodySite                   |                   |                      |                       |                     |                       |
| ImagingStudy               |                   |                      |                       |                     |                       |
| ImagingObjectSelection     |                   |                      |                       |                     |                       |

# What else do we do? Set expectations for how servers & clients interact

## What search criteria can you use?

Search operations

Examples:

- Can search for individual patient by identifier (e.g., MRN) OR full name & gender OR full name & birthdate
- Can search for Procedures by patient or by patient & specified date range

## What type of data will you get in response?

Scope of response

Examples:

- Search for patient will get all FHIR patient resources
- Search for Procedures will get all current and historical procedures or within specified date range

## How will that data be represented?

Content of response

Examples:

- Patient search will get name, identifier, gender, birthdate, birth sex, REL
- Procedures search will get type of procedure, date performed, and procedure status
- In some cases created Argonaut extensions and value sets



# Argonaut Implementation Guides In a Nutshell

| Query                            | Supported searches   | Scope of response                                | Content of response  |
|----------------------------------|--|--|--|
| Patient                          | Identifier (e.g., MRN)<br>OR (Full name + gender OR Full name + birthdate)                   | FHIR patient resources                           | <ul style="list-style-type: none"> <li>Name</li> <li>Patient identifier</li> <li>Gender</li> <li>Birthdate</li> <li>Birth sex</li> <li>Race, ethnicity, language</li> </ul>                        |
| Allergies                        | Patient<br>OR Patient + Date   | All allergies                                    | <ul style="list-style-type: none"> <li>Type of allergy</li> <li>Allergy status</li> </ul>  |
| Assessment and Plan of Treatment | Patient<br>OR Patient + Category<br>OR Patient + Status<br>OR Patient + Specified date range | All Assessment and Plan of Treatment information | <ul style="list-style-type: none"> <li>Care plan category (Argonaut extensions)</li> <li>Care plan status</li> <li>Narrative summary</li> </ul>  |
| Care Team                        | Patient<br>OR Patient + Category<br>OR Patient + Status                                      | All current Care Team members                    | <ul style="list-style-type: none"> <li>Care plan category (Argonaut extensions)</li> <li>Care plan status</li> <li>Care team members</li> <li>Care team provider roles</li> </ul>                  |
| Goals                            | Patient<br>OR Patient + Specified date range   | All patient goals                                | <ul style="list-style-type: none"> <li>Narrative description of goals</li> <li>Goals status</li> </ul>   |
| Immunizations                    | Patient  | All immunizations                                | <ul style="list-style-type: none"> <li>Immunization status (Argonaut valueset)</li> <li>Date of administration</li> <li>Type of vaccine</li> <li>Indicator of vaccine given or reported</li> </ul> |
| Medications (statements)         | Patient  | All medications                                  | <ul style="list-style-type: none"> <li>Medication</li> <li>Medication status</li> <li>Date or date range</li> </ul>  |
| Medications (order)              | Patient  | All medication orders                            | <ul style="list-style-type: none"> <li>Medication</li> <li>Order date</li> <li>Order status</li> <li>Prescriber</li> </ul>   |

# Argonaut Implementation Guides In a Nutshell (continued)

| Query                                   | Supported search operations  | Scope of response  | Content of response   |
|---|--|--|---|
| Laboratory results (diagnostic reports) | Patient<br>OR Patient + Diagnostic Report Code(s)<br>OR Patient + Specified date range | All diagnostic reports                                   | <ul style="list-style-type: none"> <li>Laboratory code (LOINC)</li> <li>Result</li> <li>Status</li> <li>Time of measurement</li> <li>Time of report</li> <li>Source of report</li> </ul>                                      |
| Laboratory results (observations)       | Patient<br>OR Patient + Laboratory Code(s)<br>OR Patient + Specified date range        | All observations   | <ul style="list-style-type: none"> <li>Laboratory code (LOINC)</li> <li>Result value</li> <li>Status</li> <li>Time of measurement</li> <li>Reference range</li> </ul>   |
| Problems and Health Concerns            | Patient  | All problems and health concerns, current and historical | <ul style="list-style-type: none"> <li>Problem or health concern code</li> <li>Problem or health concern category code (Argonaut extension)</li> <li>Problem or health concern status</li> <li>Verification status</li> </ul> |
| Procedures                              | Patient<br>OR Patient + Specified date range   | All procedures, current and historical                   | <ul style="list-style-type: none"> <li>Type of procedure</li> <li>Date performed</li> <li>Procedure status</li> </ul>   |
| Smoking status                          | Patient  | Smoking status   | <ul style="list-style-type: none"> <li>Smoking observation status</li> <li>Result value code (LOINC)</li> <li>Date recorded</li> <li>Smoking status</li> </ul>  |
| Vital signs                             | Patient<br>OR Patient + Specified date range   | All vitals   | <ul style="list-style-type: none"> <li>Type of measurement (Argonaut value set)</li> <li>Time of measurement</li> <li>Result value (Argonaut value set)</li> <li>Observation status</li> </ul>                                |
| Implantable devices                     | Patient  | All UDIs for a patient's implantable devices             | <ul style="list-style-type: none"> <li>Human readable form of barcode string</li> <li>Type of device</li> </ul>   |

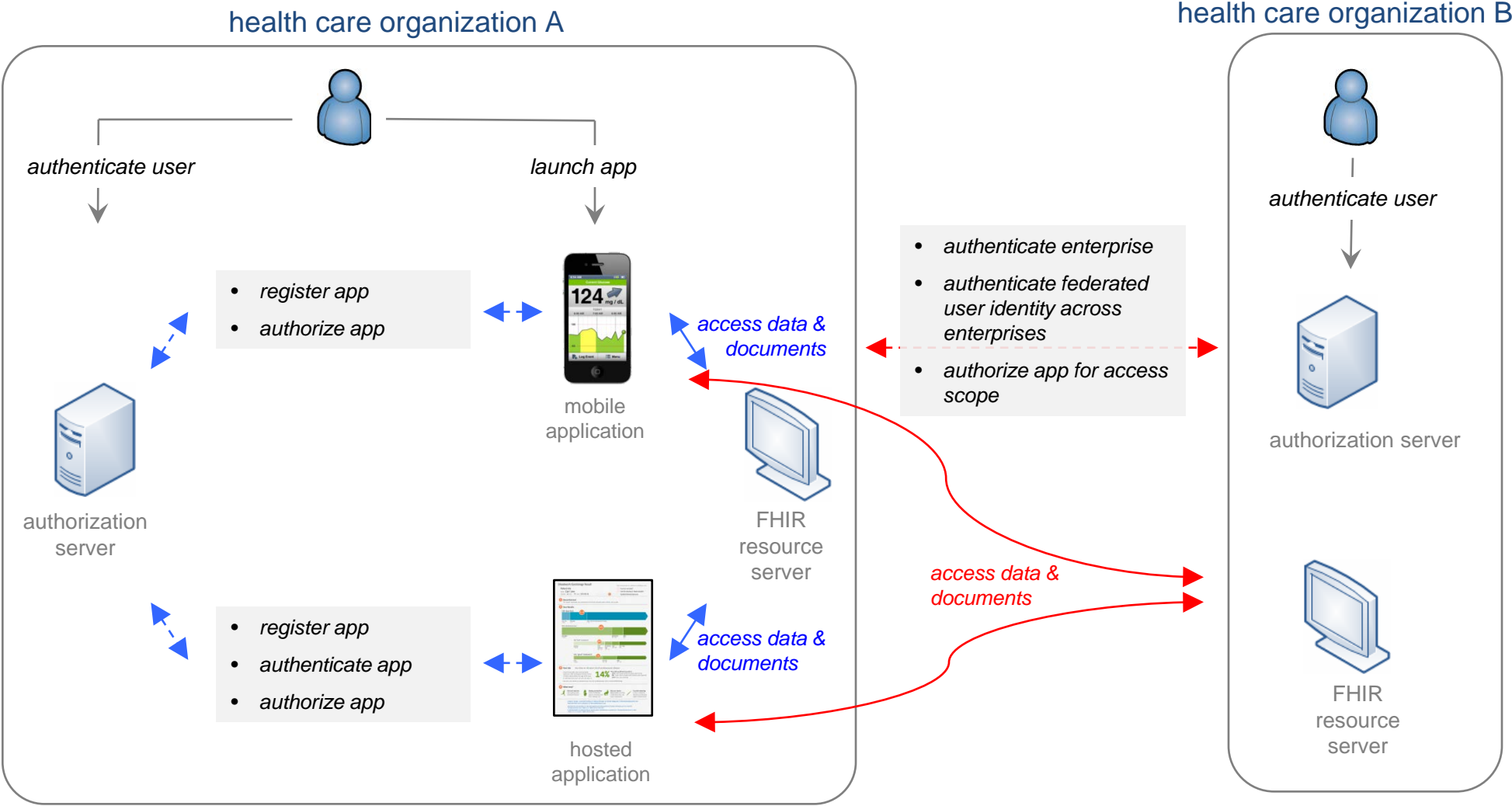
## Argonaut Implementation Guides In a Nutshell (continued)

| Query              | Supported search operations  | Scope of response  | Content of response  |
|--------------------|--|--|--|
| Provider Directory | Practitioner<br>OR Practitioner + Specialty<br>OR Practitioner + Location (WIP)<br>OR Organization Identifier<br>OR Organization Name<br>OR Organization Address<br>OR Endpoint identifier<br>OR Endpoint name | All practitioner, organization, and endpoint information | <ul style="list-style-type: none"> <li>• Practitioner name</li> <li>• Practitioner Identifier</li> <li>• Practitioner Role and organization</li> <li>• Practitioner Qualifications</li> <li>• Organization name</li> <li>• Organization identifier</li> <li>• Organization status</li> <li>• Organization contact</li> <li>• Organization physical address</li> <li>• Organization endpoint address</li> <li>• Endpoint name</li> <li>• Endpoint status</li> <li>• Endpoint organization</li> <li>• Endpoint channel type</li> <li>• Endpoint address</li> </ul> |
| Document           | Document<br>OR Patient   | All documents for a patient                              | <ul style="list-style-type: none"> <li>• Patient</li> <li>• Document HTTPS address</li> <li>• Document type</li> <li>• Document format</li> <li>• Document reference date</li> <li>• Status</li> <li>• Document identifier</li> </ul>  |

# What will Argonaut Implementation Guides allow people to do?

## Within enterprise

## Cross-enterprise

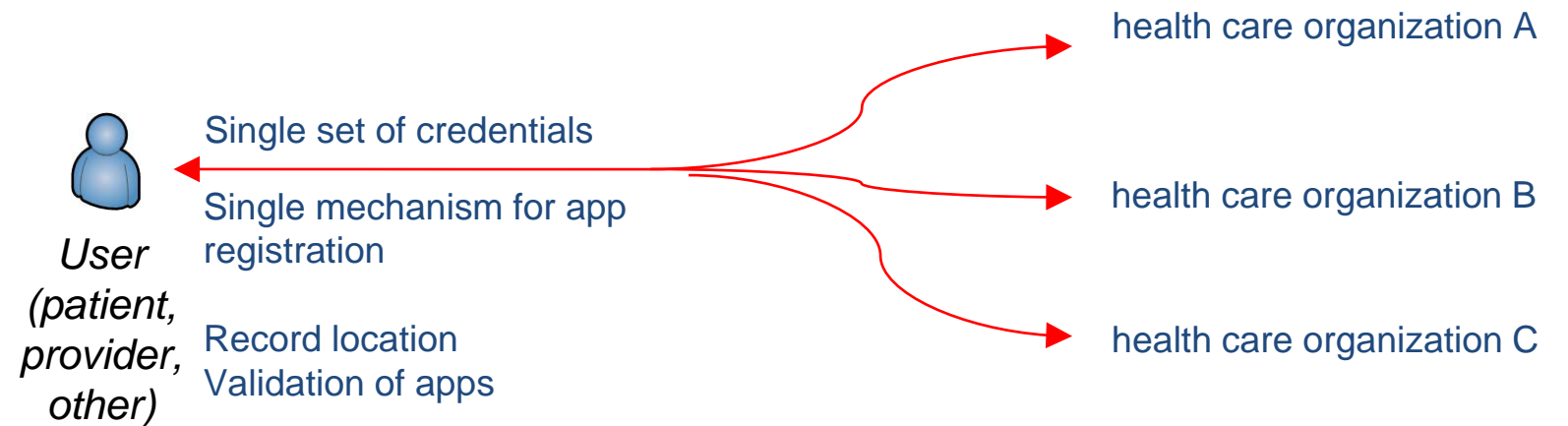


# Argonaut Can't Solve Ecosystem Issues

**Argonaut can solve this problem.....**



**...but can't fill ecosystem gaps**



# Who's using the Argonaut Project Implementation Guides

**The following Argonaut founders are basing their FHIR APIs on the Argonaut Implementation Guides:**

- Accenture
- athenahealth
- Cerner
- Epic
- MEDITECH
- Surescripts
- The Advisory Board Company

**The following nationwide health information networks are implementing Argonaut specifications:**

- Carequality – have already implemented a preliminary version of the upcoming Argonaut Project Provider Directory Implementation Guide
- CommonWell Health Alliance – are building FHIR into their core services using the Argonaut Implementation Guides for Data & Document Access and Provider Directory

**Argonaut does NOT do conformance testing**

- Will re-evaluate if heterogeneous implementations become a problem, however, feedback from market is that variations among vendors is tolerable at present

# Argonaut Project Current Activities

## 1. Scheduling

- Retrieve existing patient or provider appointments
- Search for an open appointment
- Request an appointment
- Amend, cancel, or reschedule an appointment

## 2. Enhancing integration of EHRs and Apps (in collaboration with CDS Hooks Project)

- Integration of an external app into an EHR workflow
- Trigger external service from initial Patient View in EHR
- Security model for integration of external apps with EHRs

## 3. Planning for 2018 Projects – we welcome your suggestions!

- Breadth vs Depth
- Functional vs Content



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