API Current State Assessment

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API Landscape Assessment

Objectives

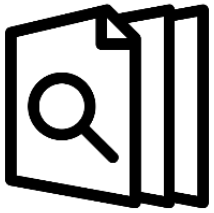
- Present findings from a current-state assessment of API use in health care
- Discuss implications for app development

Areas of Focus

- Clinical use cases and standards for APIs
- Challenges and technical concerns for read and write capabilities
- Outlook for future development of write capabilities

API Landscape Assessment Methods

We used the following methods to conduct the current-state assessment:

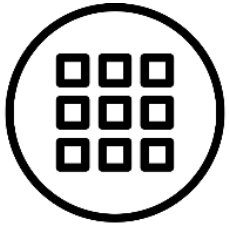


Literature Review

Peer reviewed and grey literature

Key Informant Interviews

13 stakeholders, representing 3 different stakeholder types



EHR App Gallery Review

Publicly available and vendor-curated galleries

Technical Expert Panel

13 subject matter experts representing different stakeholder perspectives

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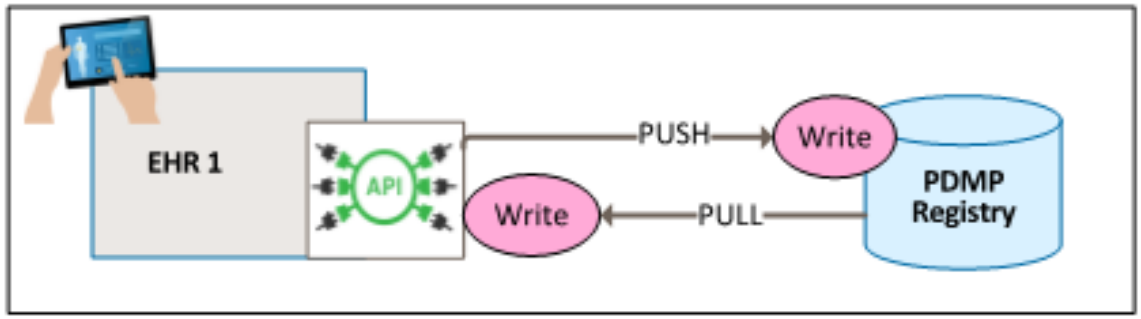
API Landscape Assessment Limitations

- The categorization of app end-users and app purpose was derived from publicly available information that was not consistently available across apps or app galleries
- The assessment was conducted in mid-2018; considerable progress has been made in standards and app development

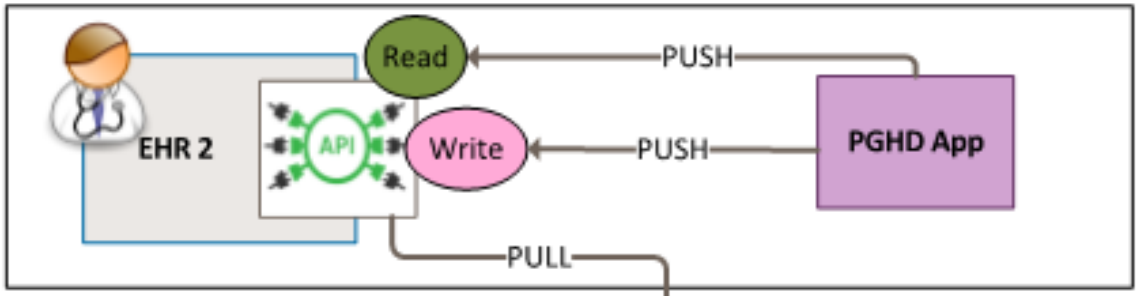
Key Findings: Landscape Assessment

API Landscape Assessment Use Case Analysis

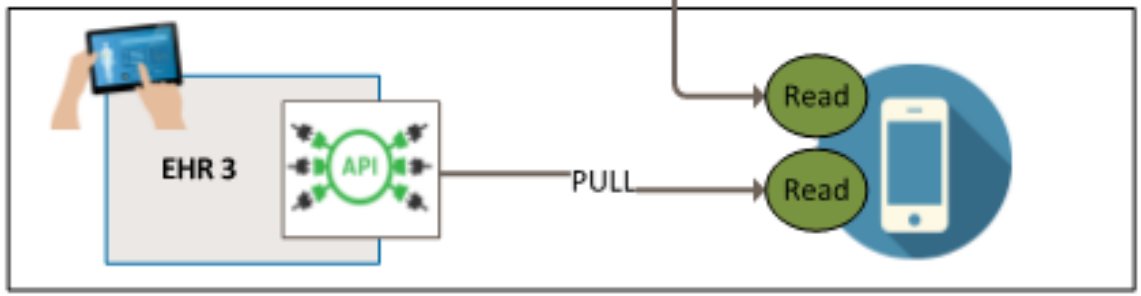
Primary Use Cases for APIs in Healthcare



Use Case 1. APIs Used for Bi-Directional Data Exchange: Data can be pushed or pulled from an EHR or external system and written into the database.



Use Case 2. APIs Used to Contribute Data to the EHR: Enables outside sources to push data to an EHR; data may be read or written into the sytem.



Use Case 3. APIs Used to Aggregate Data: Involves pulling/querying data from multiple EHRS and aggregating the data.

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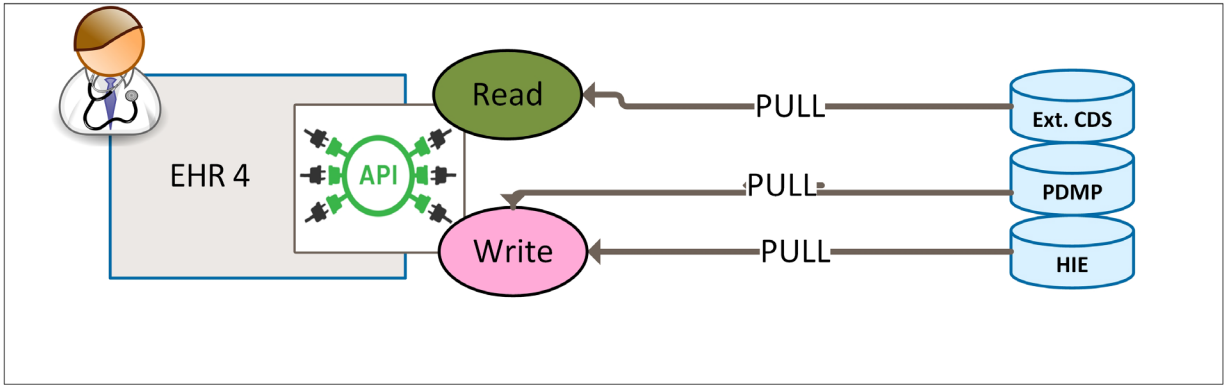
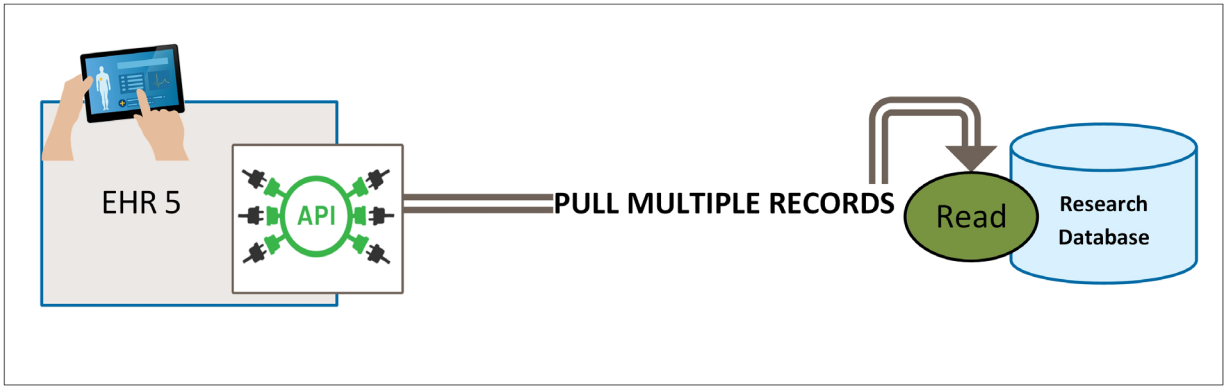
API Landscape Assessment Use Case Analysis

Primary Use Cases for APIs in Healthcare cont.



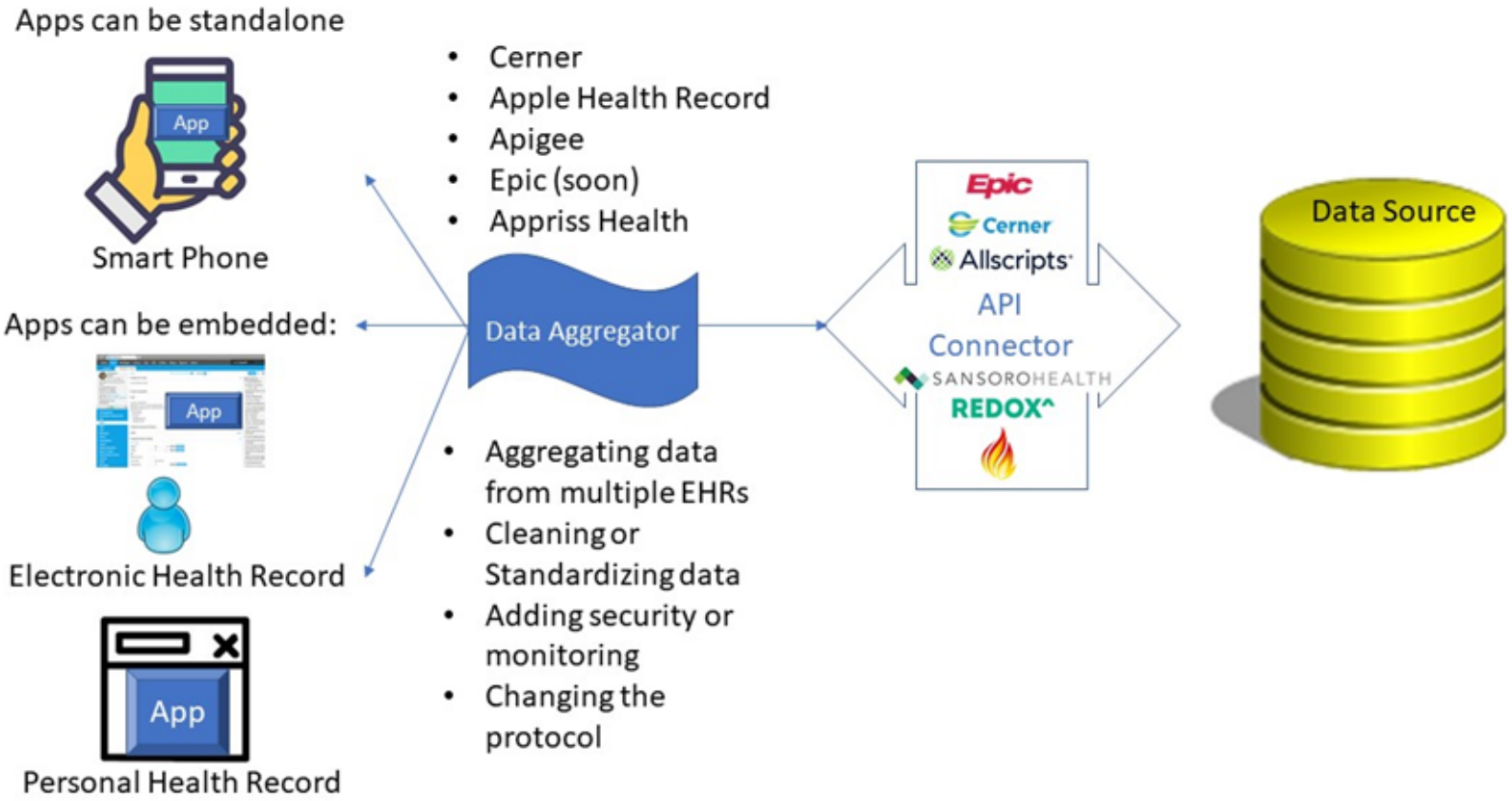
Use Case 4. APIs to Facilitate Clinical Decision Making: Involves pulling and integrating information from multiple data repositories into an EHR for clinical decision support and care management.



Use Case 5. APIs for Bulk Data Access: Enables download and/or query of multiple records from multiple patients.

Architectures for APIs/Apps

Apps can run in different configurations:



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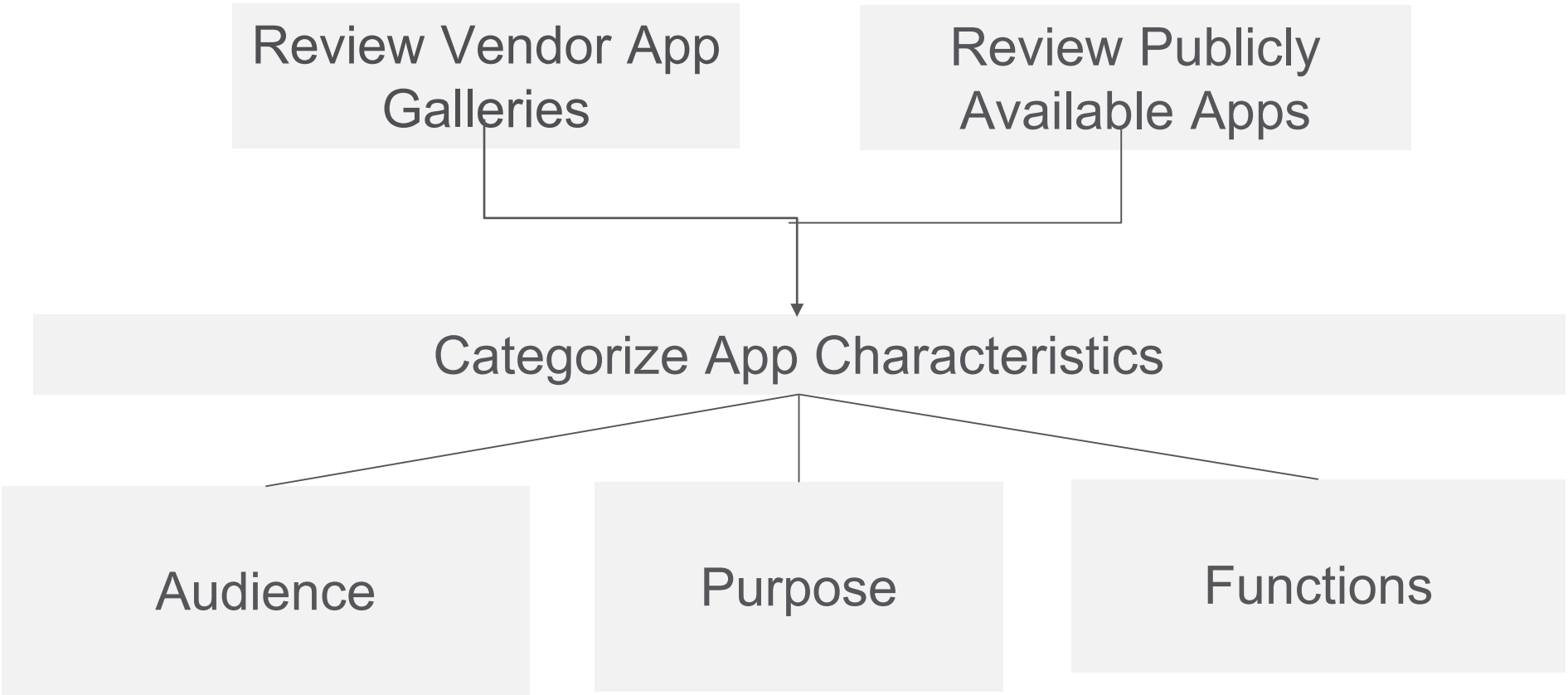
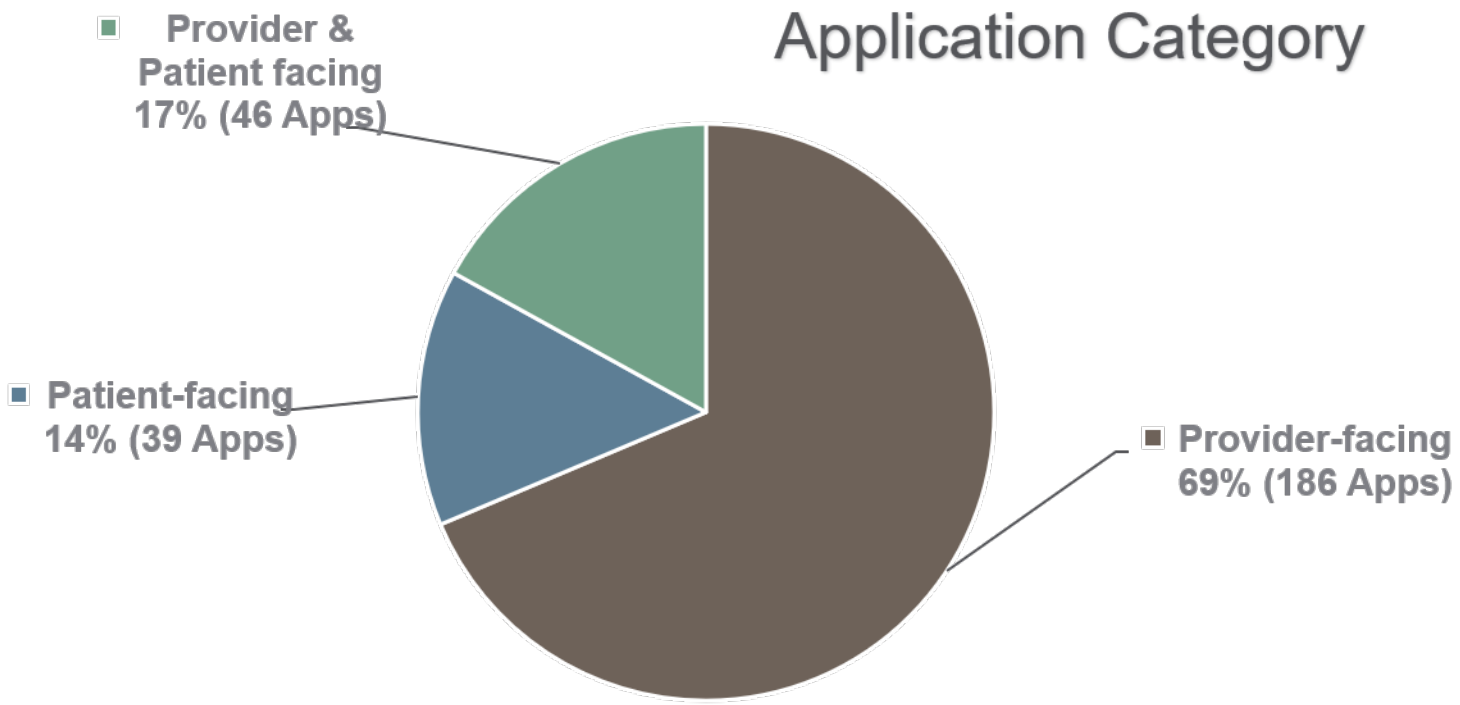
App Gallery Review



App Gallery Review

- 271 applications available, as of August 2018
- The majority (69%, 186 of 271) were provider-facing apps



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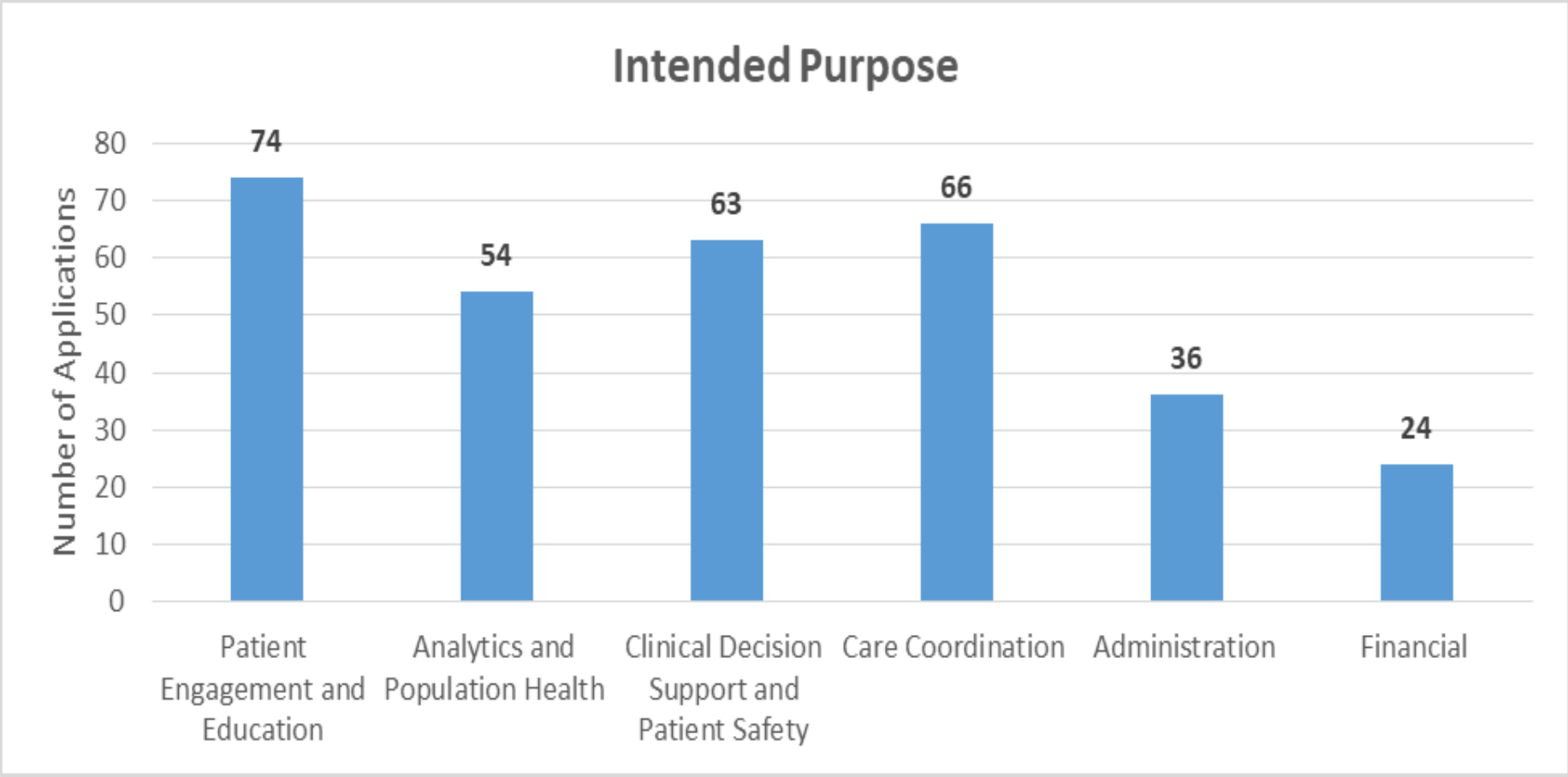
App Use Cases

- EHR vendors support a variety of use cases

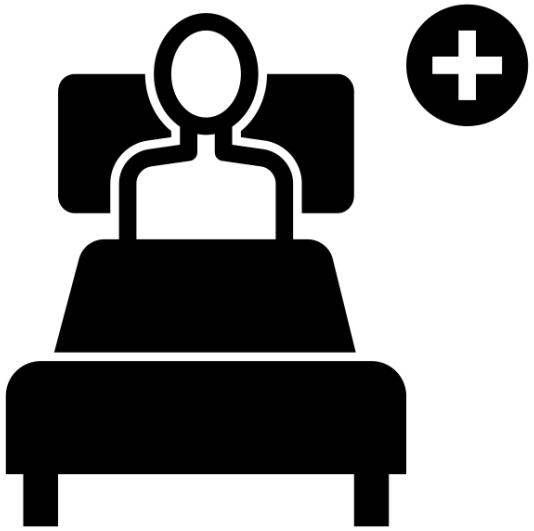


Common Characteristics of Provider-Facing Apps

- Use both proprietary and standards-based APIs
- Support both read and write functionalities
  - Write functionality is limited
  - Write implementations use proprietary APIs
- Undergo more rigorous vetting than patient-facing apps

Common Characteristics of Patient-Facing Apps

- Support read functionality almost exclusively
- Use FHIR-based APIs
  - Published FHIR end-points satisfy 2015 Edition Health IT Certification Criteria
- Undergo little or no vetting by EHR vendors
  - Authentication can be initiated via patient portals



API Development and Use

Key Issues to Advancing Provider- and Patient-Facing API Use

- A robust, stable, and widely used normative standard for FHIR
- Expansion of the US Core Data for Interoperability (common clinical data set) for clinical and administrative data
- Industry-accepted FHIR implementation guides for high-value write access use cases
- Data provenance rules and guidelines
- Sound data governance practices
- Transparent app vetting procedures or rubrics

High Value Use Cases for Patient-Facing Apps

- **Questionnaires:** Writing questionnaire responses back into the EHR (e.g., smoking cessation, PROs, SDOH)
- **Meaningful aggregation of PGDH/PRO data:** So it is presented with summary-level and/or actionable information at point of care
- **Patient Data Correction:** Developing an app that allows patients to contact their providers and request edits to their record (e.g., medication lists)
- **Care Plan Creation and Adherence:** Scheduling and reminding patients about preventive care screenings, follow-up visits, monitoring medication adherence
- **Use of CDS Hooks:** Leveraging APIs to process data and provide clinical decision support

Conclusions

Ongoing Assessments of App Marketplaces are Warranted

- Types of use cases apps can support
- Measures of adoption and use
- Number of vendors participating in voluntary vetting, code of conduct arrangements
- Availability of well-documented API specification for app developers

Thank You!

Resources

- Dullabh P, Hovey L, Heaney-Huls K, Rajendran N, Wright A, Sittig DF. **Application Programming Interfaces in Health Care: Findings from a Current-State Sociotechnical Assessment.** Applied Clinical Informatics Journal, January 2020: https://www.thieme-connect.com/products/ejournals/html/10.1055/s-0039-1701001?update=true

Thank You!

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