

NORTHROP GRUMMAN



Hearing on Functional Requirements for the Nationwide Health Information Network

National Committee on Vital and Health Statistics (NCVHS)

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This document discusses an NHIN Architecture Prototype project made possible by a contract from the Office of the National Coordinator for Health Information Technology (ONC), DHHS. The content is solely the responsibility of the authors and does not necessarily represent the official view of ONC.



DEFINING THE FUTURE

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Context

HEALTH

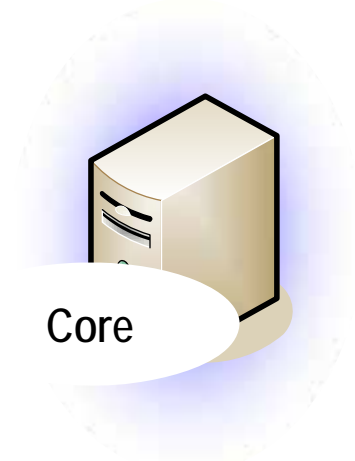
DEFINING THE FUTURE



Definitions – Core versus Edge

Core

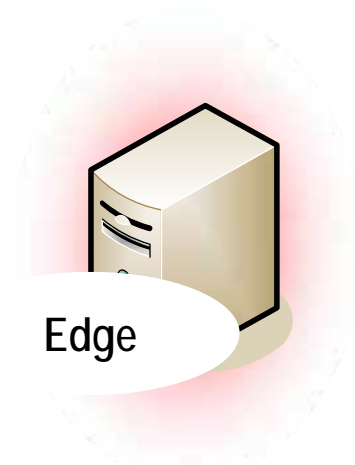
A system / service whose primary purpose it to promote nationwide interoperability.



NHIN

Edge

A system / service that has a purpose that is not primarily interoperability, but may participate in interoperability.





What the Definitions Don't Say

Not about Location

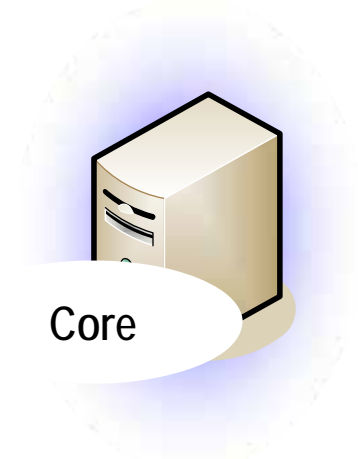
A core service may be located within the perimeter of a facility.

Not about Sponsorship

Core services are not necessarily sponsored by a central or government organization.

Not about Multiplicity

A core service does not have to be unique or centralized. There might be a number of instances of a core service.





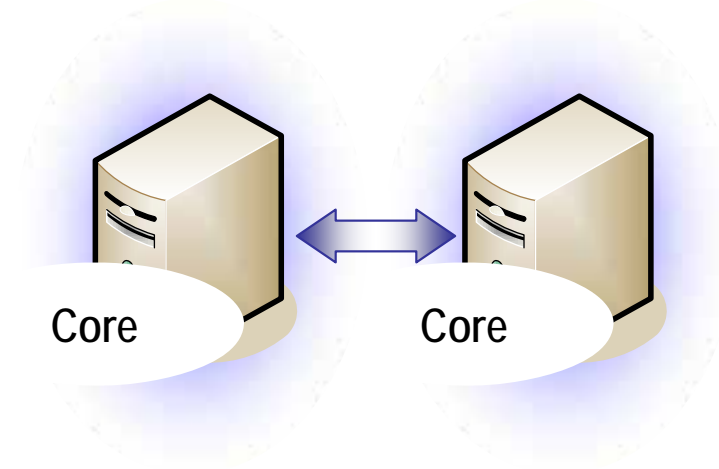
Implications

*Most discussion and analyses
Focus on Core systems / services.*

Corollary to these Definitions

- There need be no single instance of any one core component or service.
- Multiple core components need to be able to coexist and cooperate.

*Path to scalability as well as multiple NHIN
architectures / solutions.*





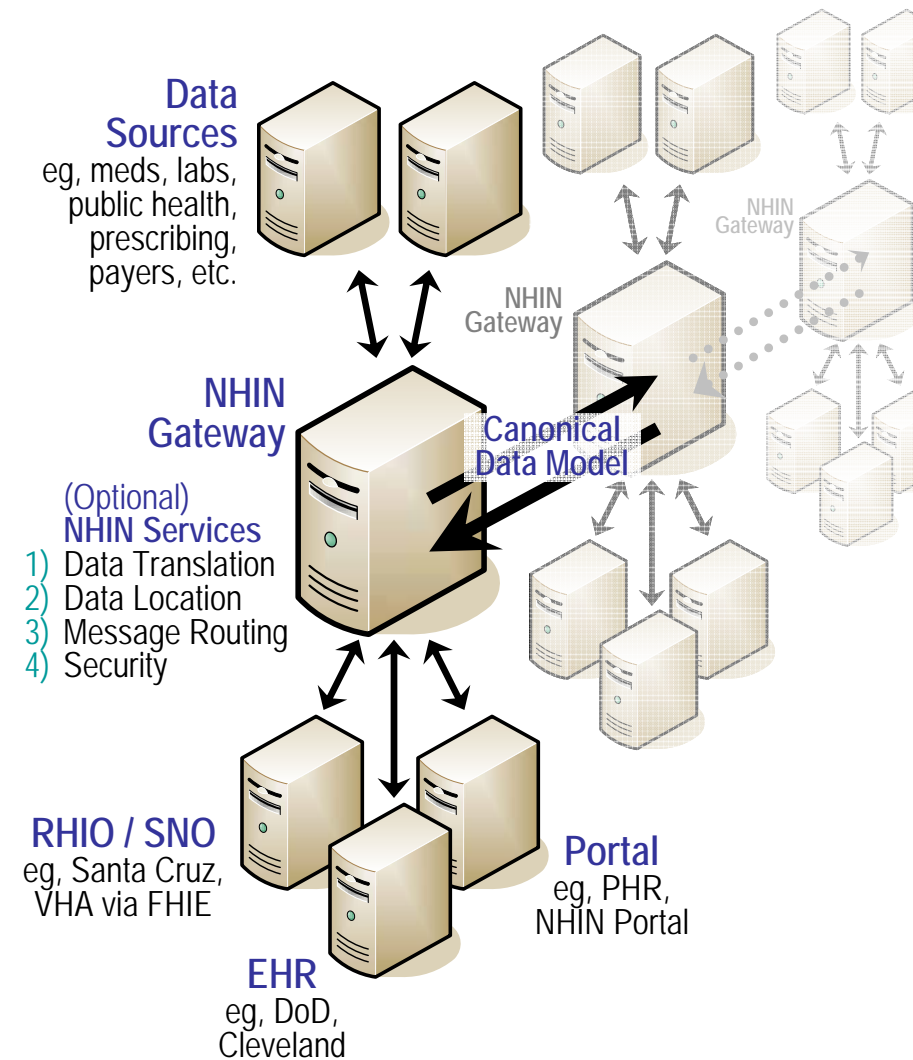
Fundamental Goals

Sustains Interoperability

1. Develop / enforce nationwide standards to facilitate interoperability.

2. Leverage success at the local level & "lower the barrier" for entry.

Facilitates Adoption





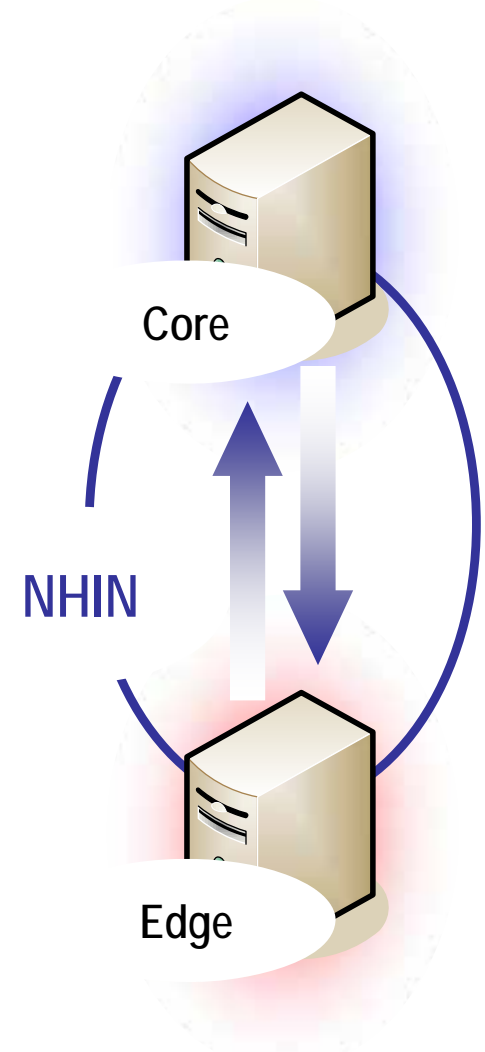
NHIN – a System of Systems

A Nationwide Health Information Network is a single system of systems that includes both core and edge systems / components.

Requirements for NHIN...

- ...describe the interaction between core and edge systems.
- ...and the interaction between core systems.
- ...cannot be about core only or edge only.

Requirements for interoperability may be addressed by core or edge systems.



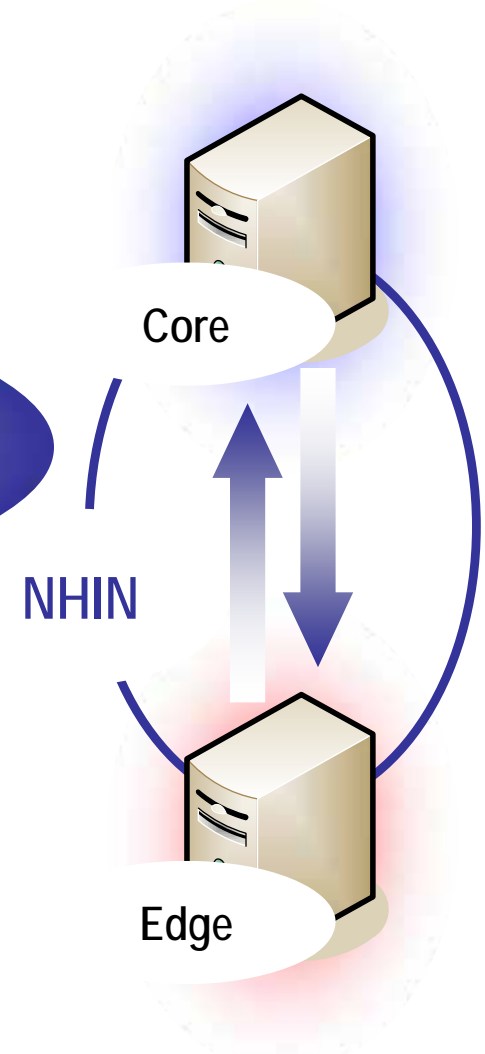


Fundamental Requirement of Core Systems

Requirements for interoperability may be addressed by core or edge systems.

Fundamental requirement of core systems is to provide a level of abstraction such that any requester need not know whether a core or edge system provides the requested service.

- Simplifies the interaction for requesting systems – “lowers the bar”.
- Provides a path for adoption of national standards.





Canonical Information Model

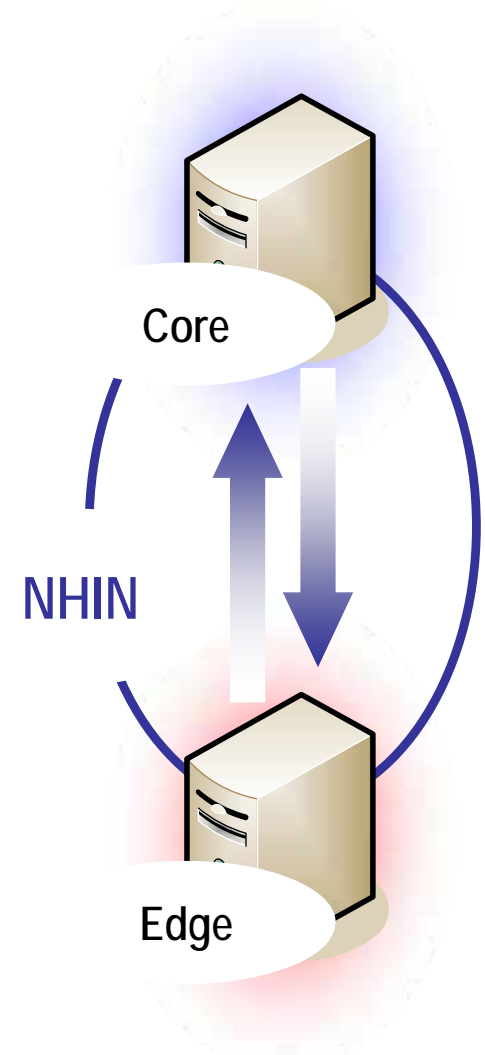
We don't see a path to abstraction without a canonical information model.

Should a canonical information model be a requirement?

We are adopting one to facilitate standards-based core system intercommunication.

Should there be an established standard for a canonical information model?

We are adopting HL7 V3 Reference Information Model (RIM).





Example...

Based on the
Consumer Empowerment Use Case...

There is a requirement for a service to locate and retrieve information.

1. Find the patient.
2. Retrieve and transfer the data.

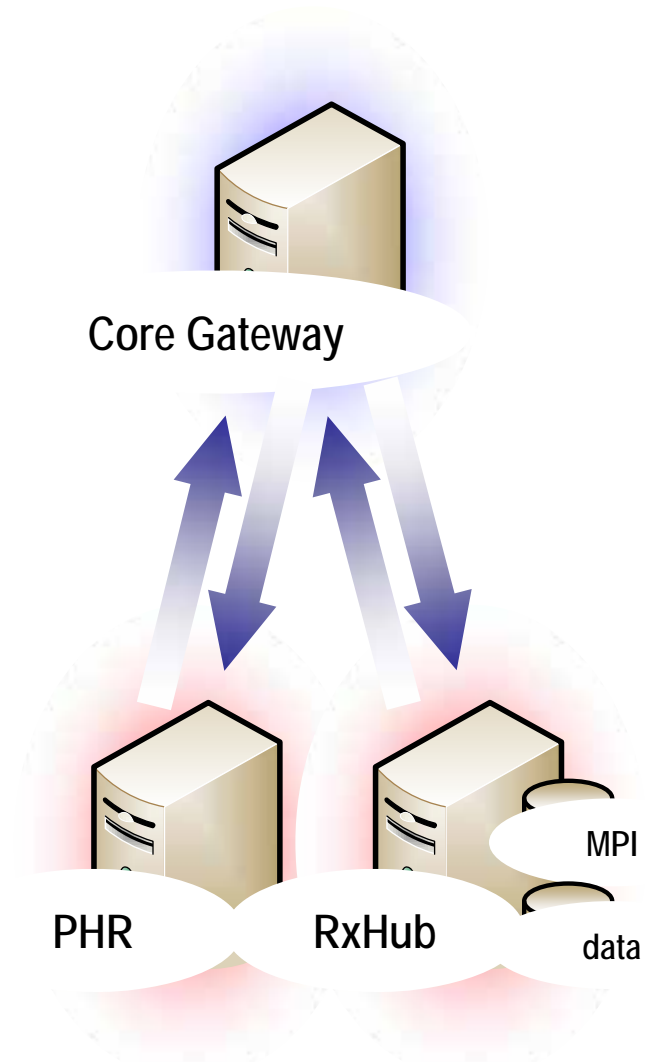


Example...

Medication history is provided by a sophisticated entity providing a nationwide service...

...with its own MPI.

...with its own data repository.

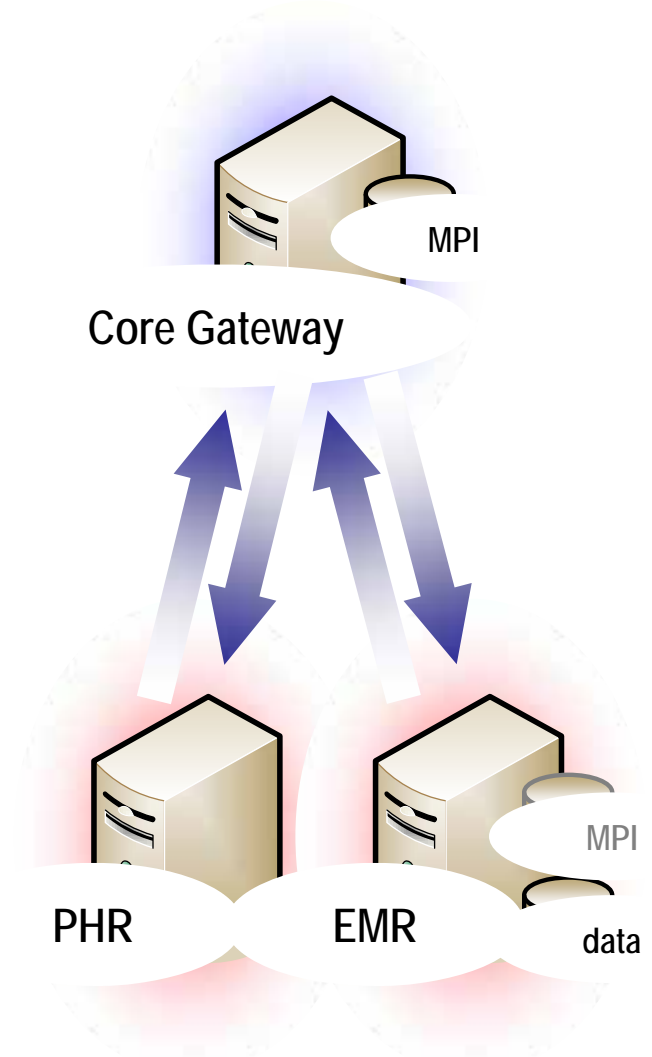




Example...

Medication history is provided by one or more hospital EMRs located throughout the country...

...using NHIN to locate the patient.
...but maintaining their own data repositories.

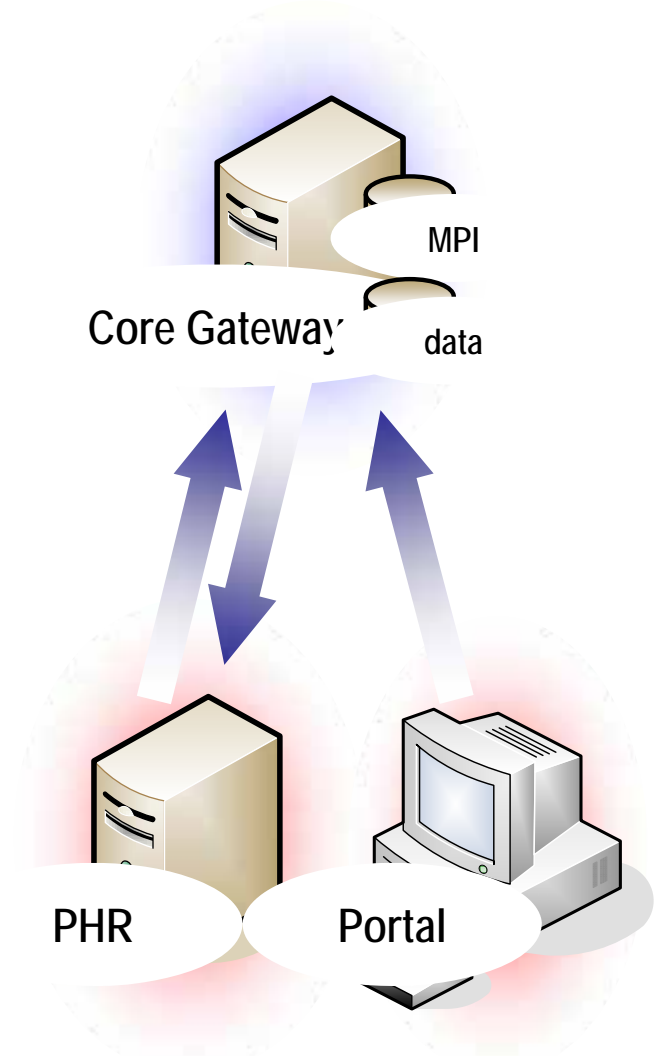




Example...

Medication history is provided by a number of physicians with no EMR capabilities...

- ...where patients must be located by NHIN.
- ...where NHIN must persist the data.



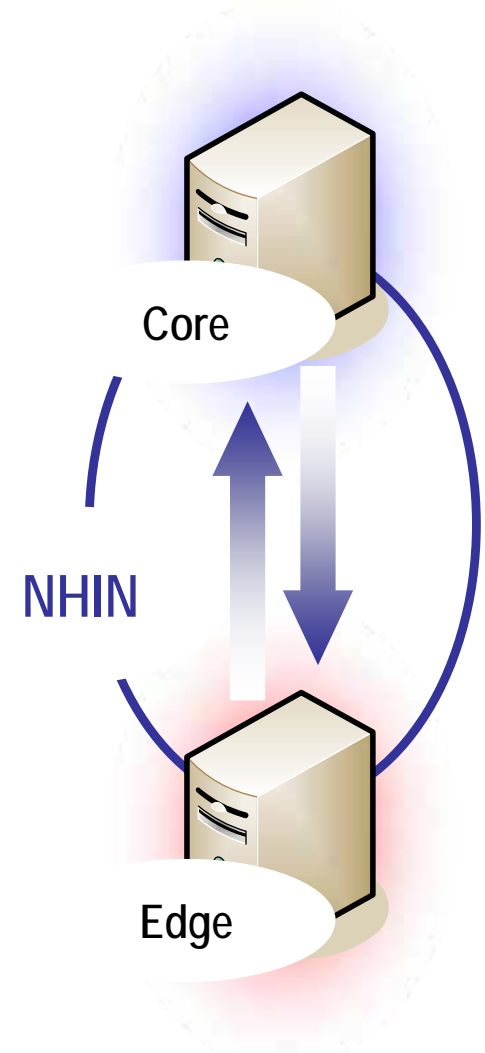


Requirements



Minimal and Essential Requirements of NHIN

1. Translation – both message structure and terminology.
2. Information Model – to facilitate inter-core communications and support national standards.
3. Patient Identification / Location – given a specified set of data about a patient, identify the “records” belonging to that patient.
4. Message Routing – management of destination of solicited and unsolicited message.
5. Auditing – maintaining a record of information access.
6. Confidentiality –resources for security at rest and in motion, and control of access.



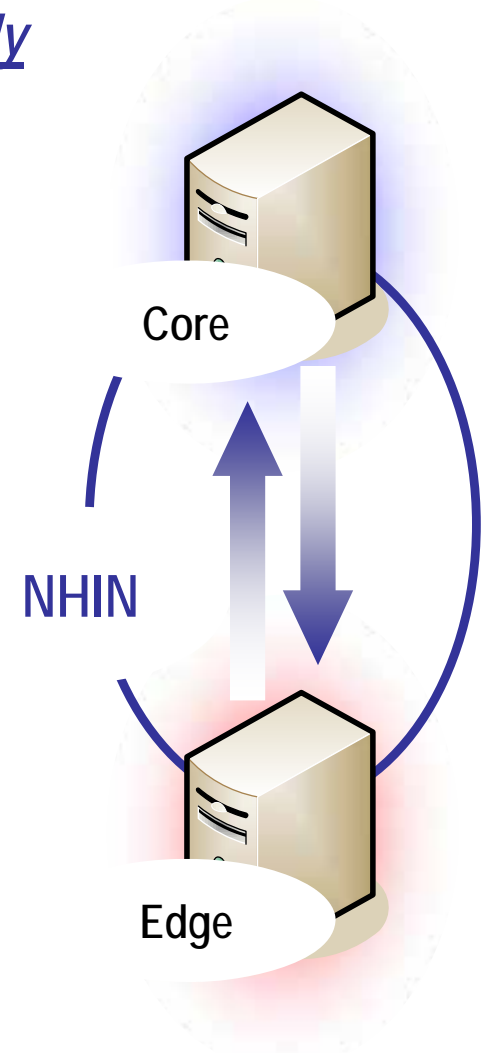


Edge Participants of NHIN

Any system / service that has a purpose that is not primarily interoperability, but may participate in interoperability.

- EMR and EHR Systems
- Personal Health Records
- Public Health Systems
- Lab Systems
- Prescribing Systems
- Disease Registries
- Immunization Registries
- Portals
- Clinical Messaging Systems
- Information Consolidators
- Etcetera...

May provide services that address requirements of NHIN.

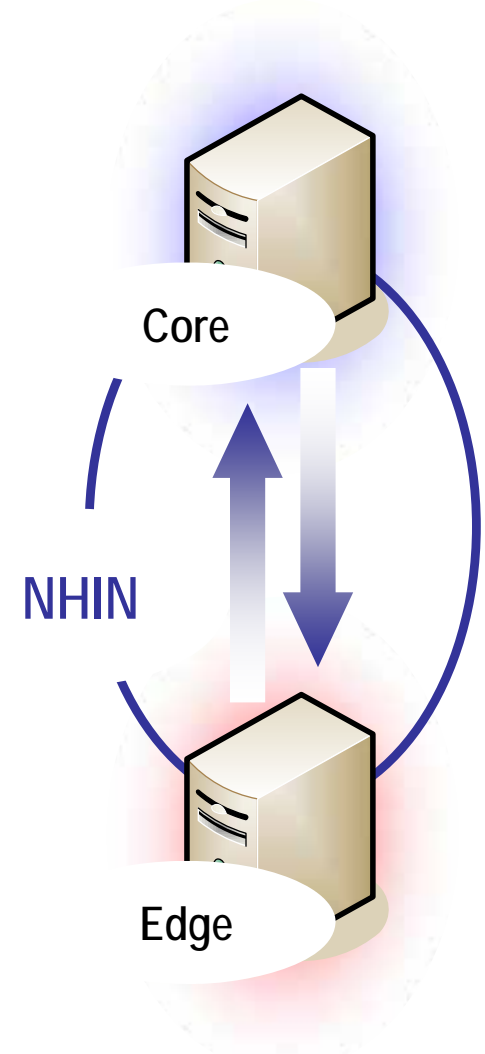




Fundamental Requirement of Core Systems

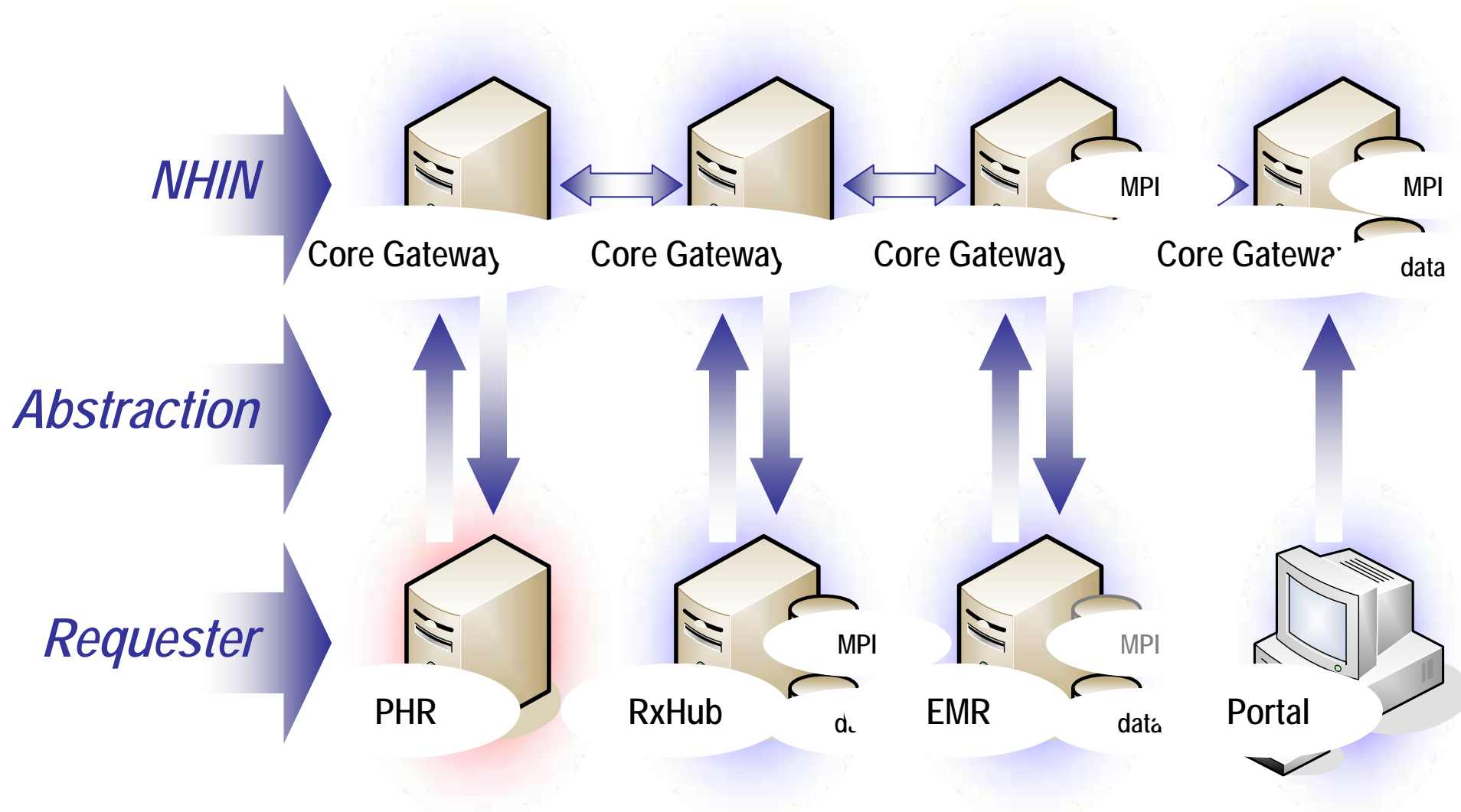
Fundamental requirement of core systems is to provide a level of abstraction such that any requester need not know whether a core or edge system provides the requested service.

- Minimal and essential requirements of core systems are to abstract services for translation, patient identification / location, message routing, auditing, and confidentiality.
- Must maintain flexibility to enable requirements to be met by core and edge systems.





Example Revisited...





What Is Not Minimal and Essential

Requirements that limit architectural flexibility.

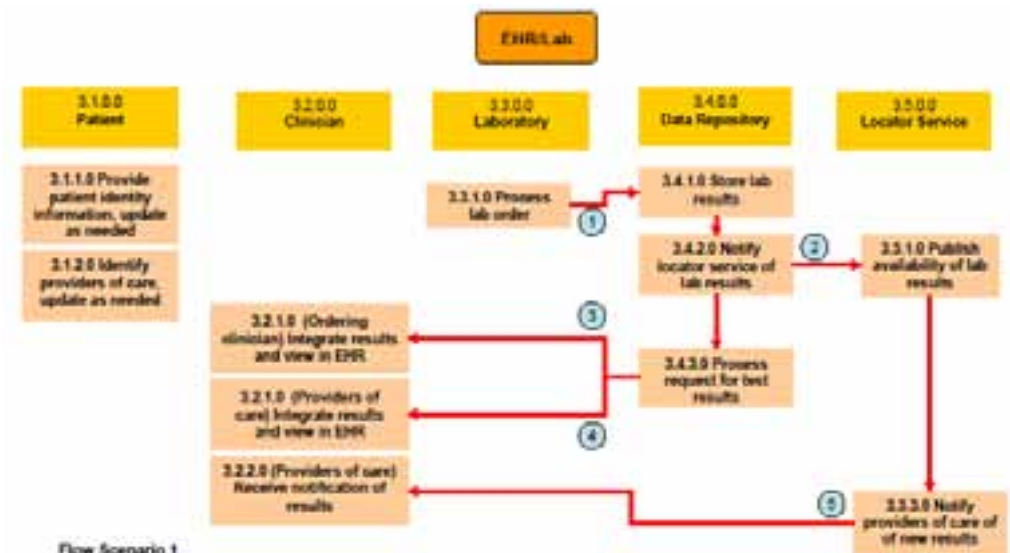
Requirements that are prescriptive of architectural components.

Example → *from the EHR
Common Use Case*

- illustrates a data repository
- outlines interaction with a record locator

Taken out of context, might appear to prescribe a specific architecture and set of required core interactions.

*Author identified this concern;
use cases are not prescriptive.*



Flow Scenario 1

Ordering clinician receives results integrated into the EHR; providers of care receive test results or notification of test results

1. Lab sends test results to the data repository.
2. Data repository sends to the locator service the location of the results in the repository.
3. Data repository sends the test results to ordering clinician's EHR system (local or remote) or other clinical data system.
4. Data repository sends the test results to the providers of care who can accept the results in an EHR system (local or remote).
5. Locator service notifies the providers of care who don't have an EHR system that can accept lab results.



Contact Information

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