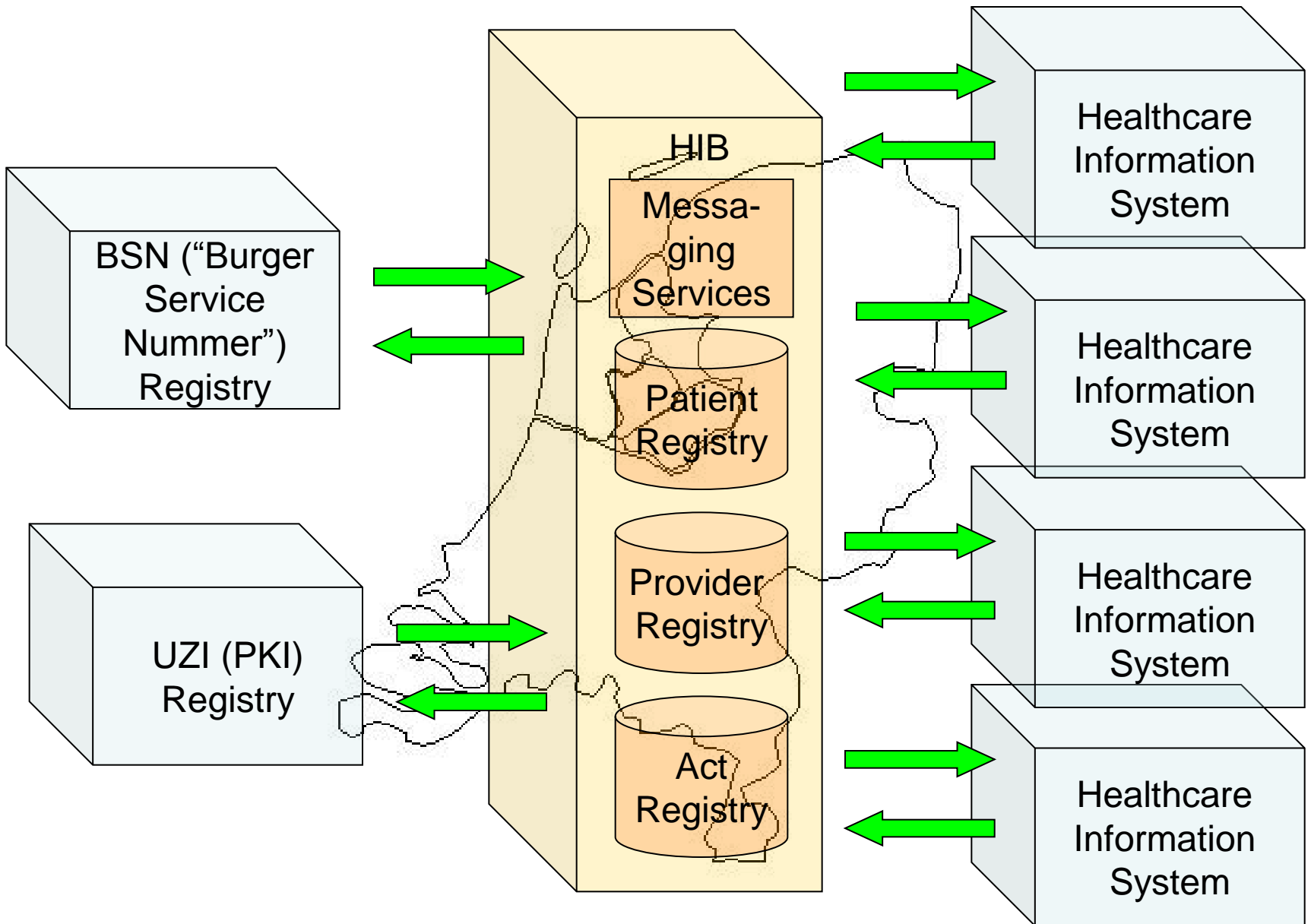


AORTA

the Dutch Healthcare Infrastructure

Marc de Graauw
marc@marcdegrauw.com



The Netherlands

- “AORTA” is the national backbone
- Healthcare Information Systems at institutions and GP’s will be online 24x7
- No clinical data at backbone, only an index of where clinical information resides
- Clinical data stays at the source
- Only possible with dense infrastructure
- Patient, provider registries et cetera

NICTIZ

- (Dutch EHR Standards Organization)
- Timeline
 - Medication File
 - Primary Care Summary
- 2003: start
- 2006: Healthcare Information Broker delivered
- 2006/7: First HIS qualifications
- 2009: General availability

NICTIZ & Dutch Healthcare

- Communication between:
 - Healthcare Provider (GP, hospital etc.)
 - Healthcare Information Broker (HIB)
- HIB provides:
 - index of which parties have patient data
 - no patient data itself
 - messaging services
 - aggregation services
- Health Level Seven version 3 (HL7v3)

Ministry of Healthcare

NICTIZ
National
Institute for ICT
in Care

CIBG
Healthcare
Professionals
Authority

Gov

Healthcare
Information
Broker

SBV-Z
Unique Person Id
Registry Provider

UZI-Register
Healthcare
Provider Registry

Market

Hospitals

GP's

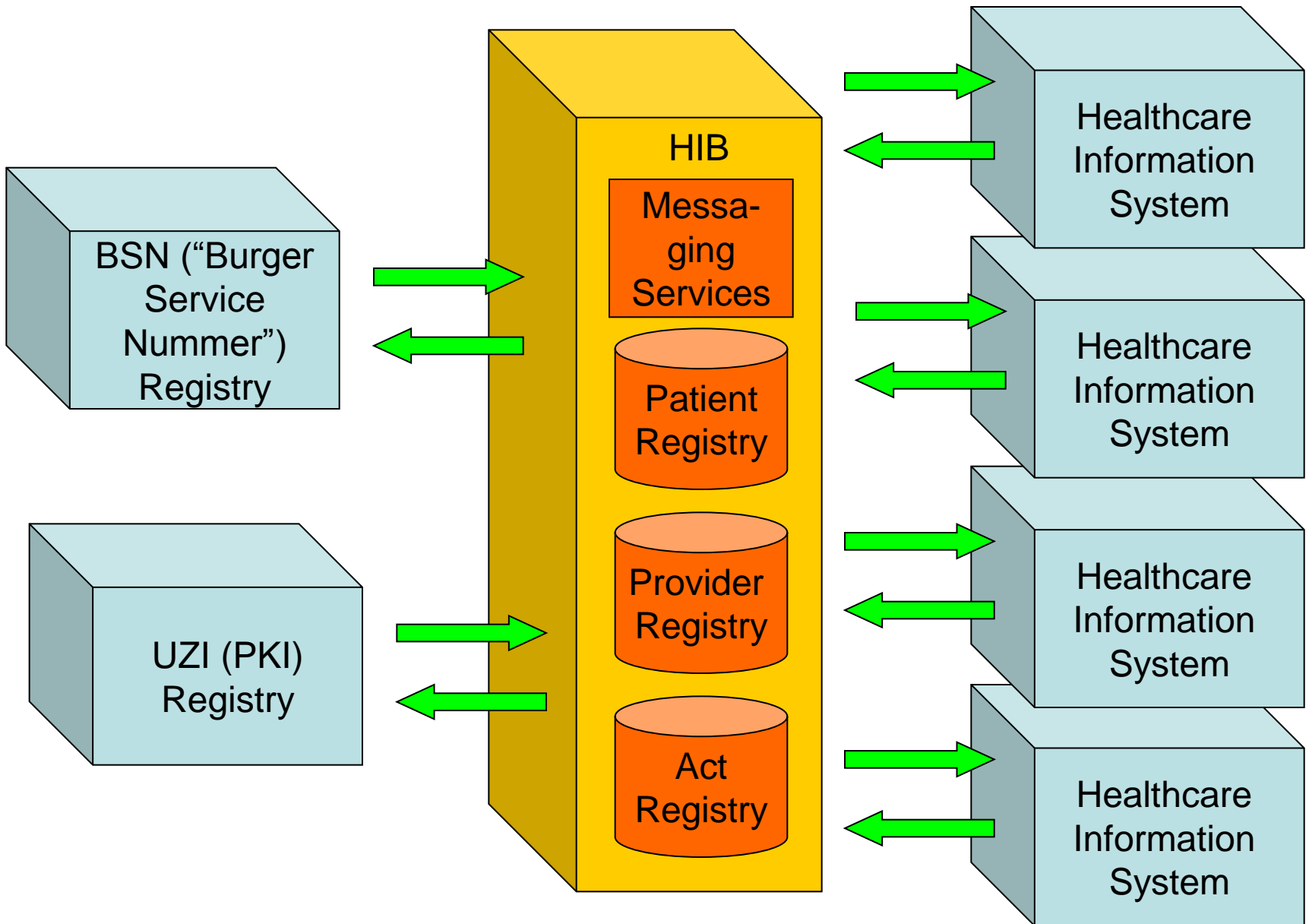
Pharmacists

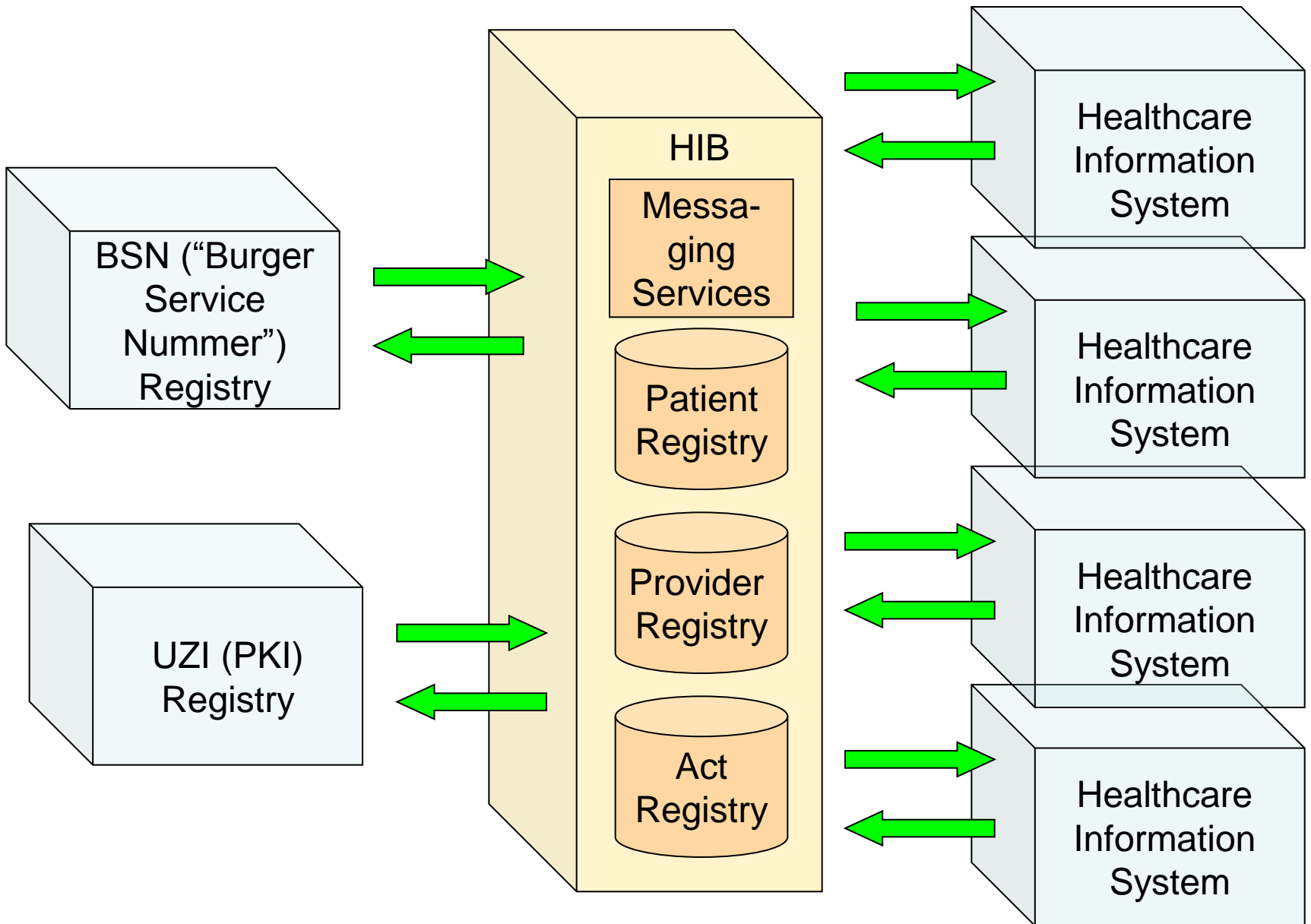
Others

Healthcare
System
Suppliers

Healthcare
Access
Providers

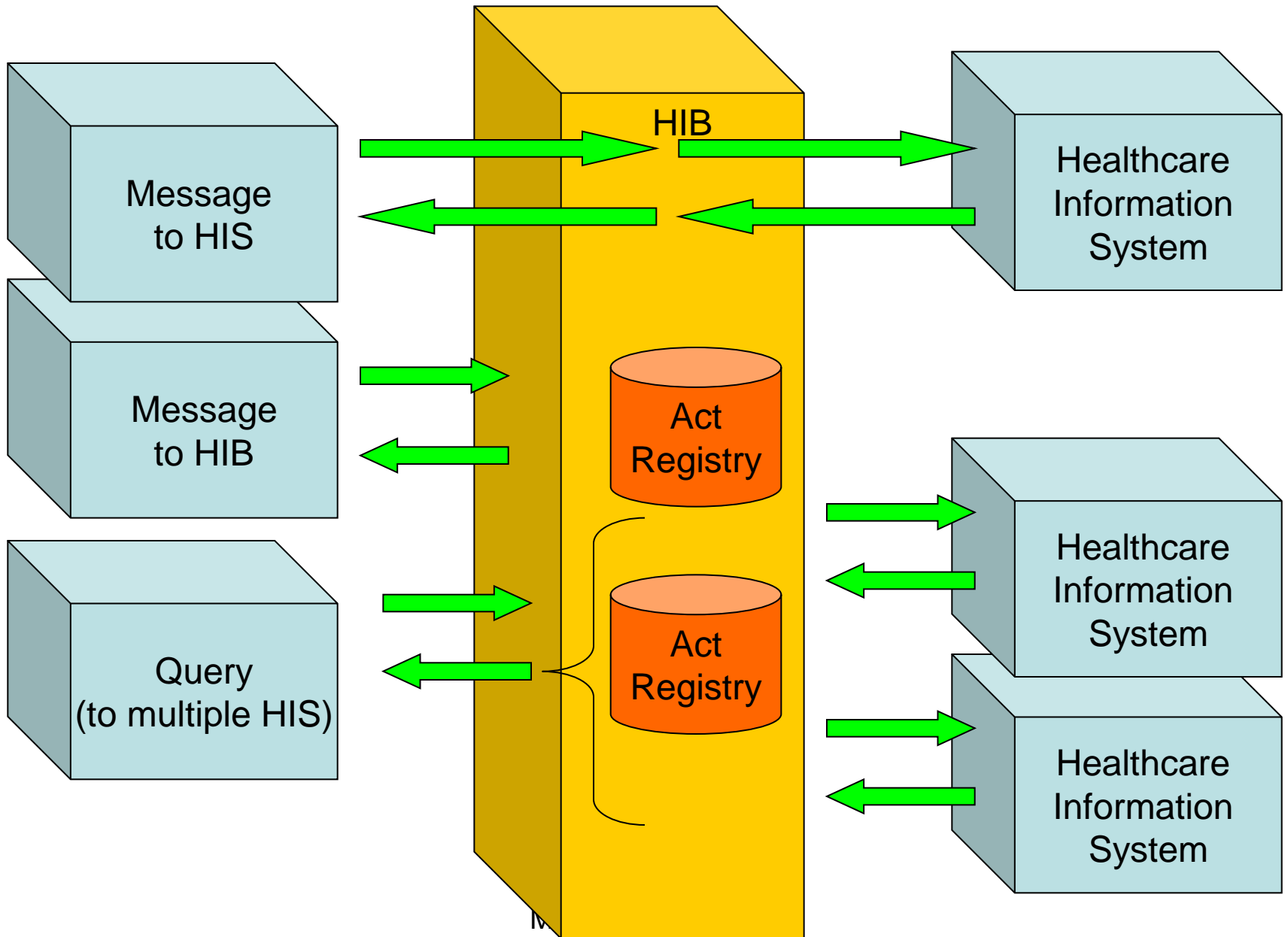
Regional
Facilities

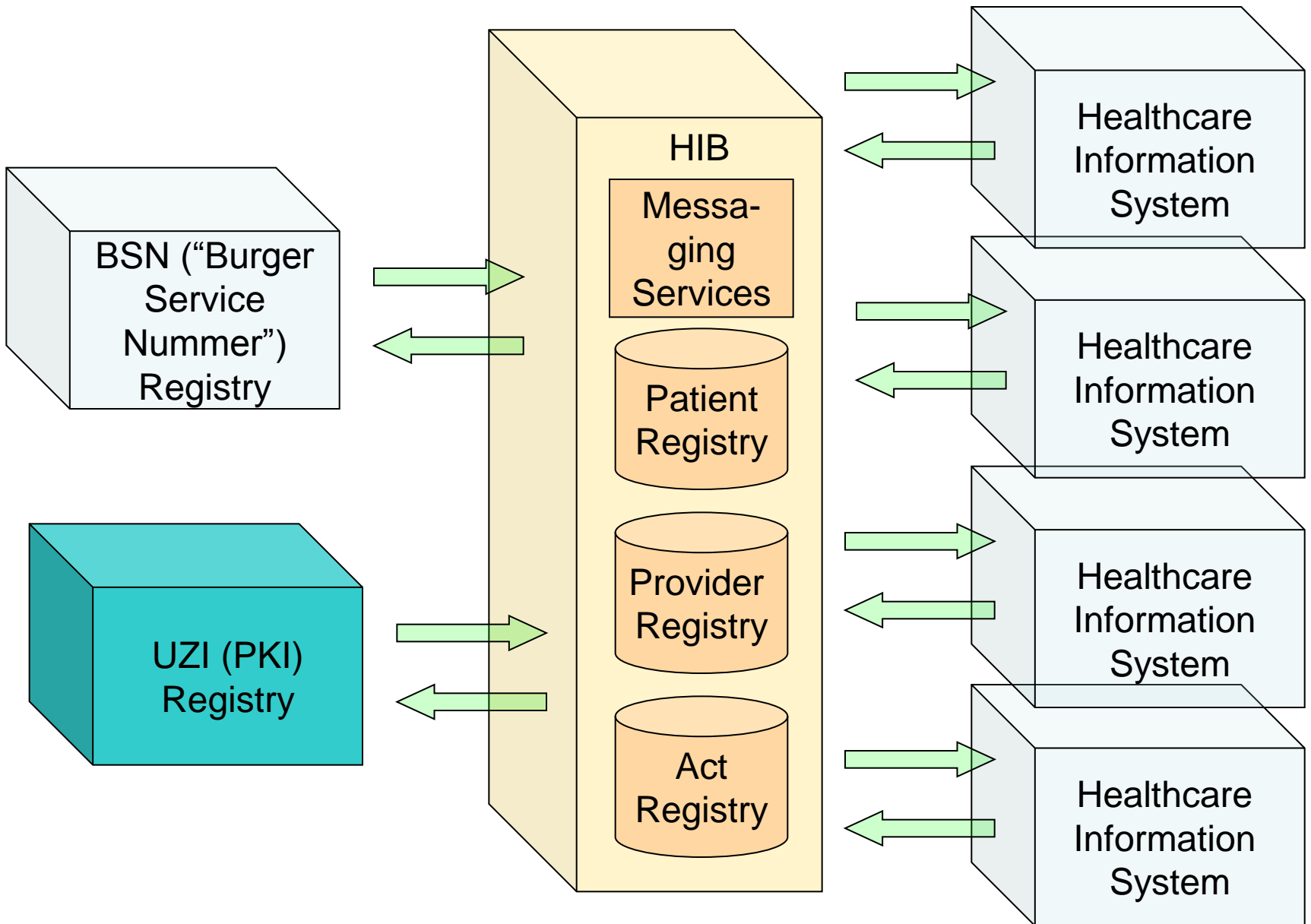




AORTA

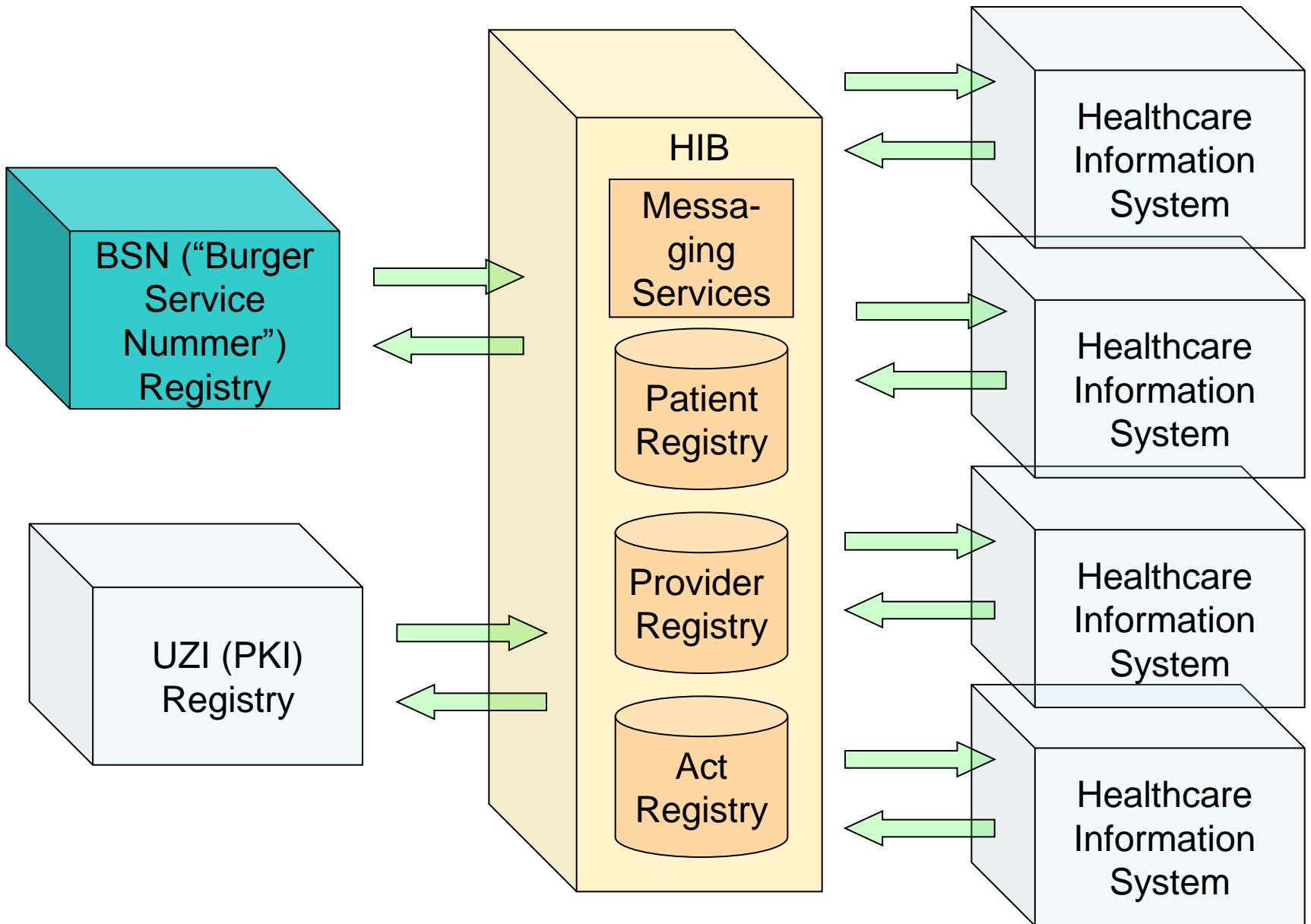
- all messages go through healthcare information broker
- three basic patterns:
 - HIS sends message to other HIS, HIB just routes
 - HIS sends message to HIB (mainly for registry updates and queries)
 - HIS queries several other HISses, HIB does registry lookups, accumulates data





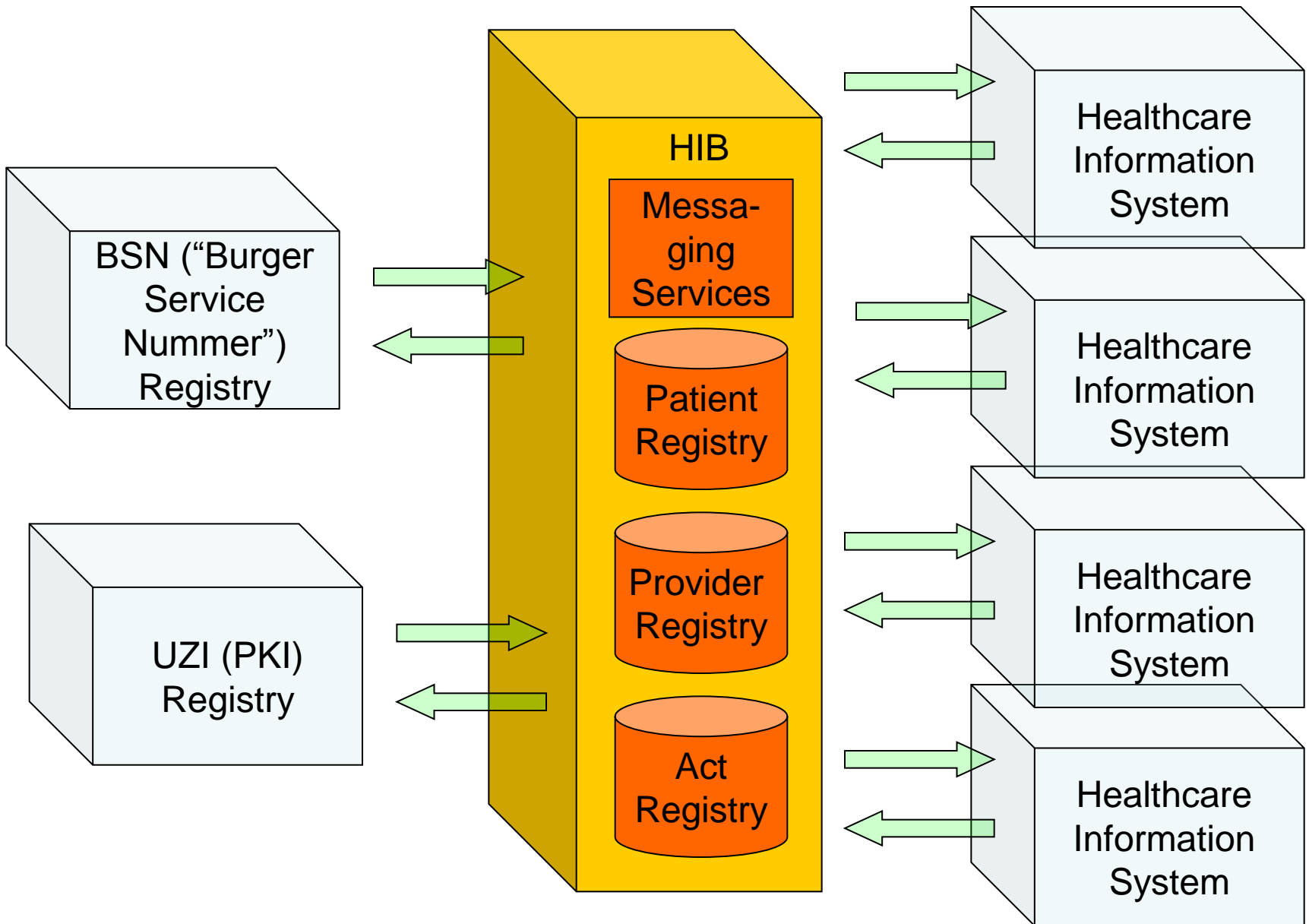
UZI Registry

- provide Dutch healthcare PKI standards
- provide and distribute smartcards with private keys
 - to all authorized healthcare institutions
 - to all authorized healthcare personnel
- provide smartcard readers, and necessary software
- publish and maintain certificate revocation lists
- also provides authentication forwarding software



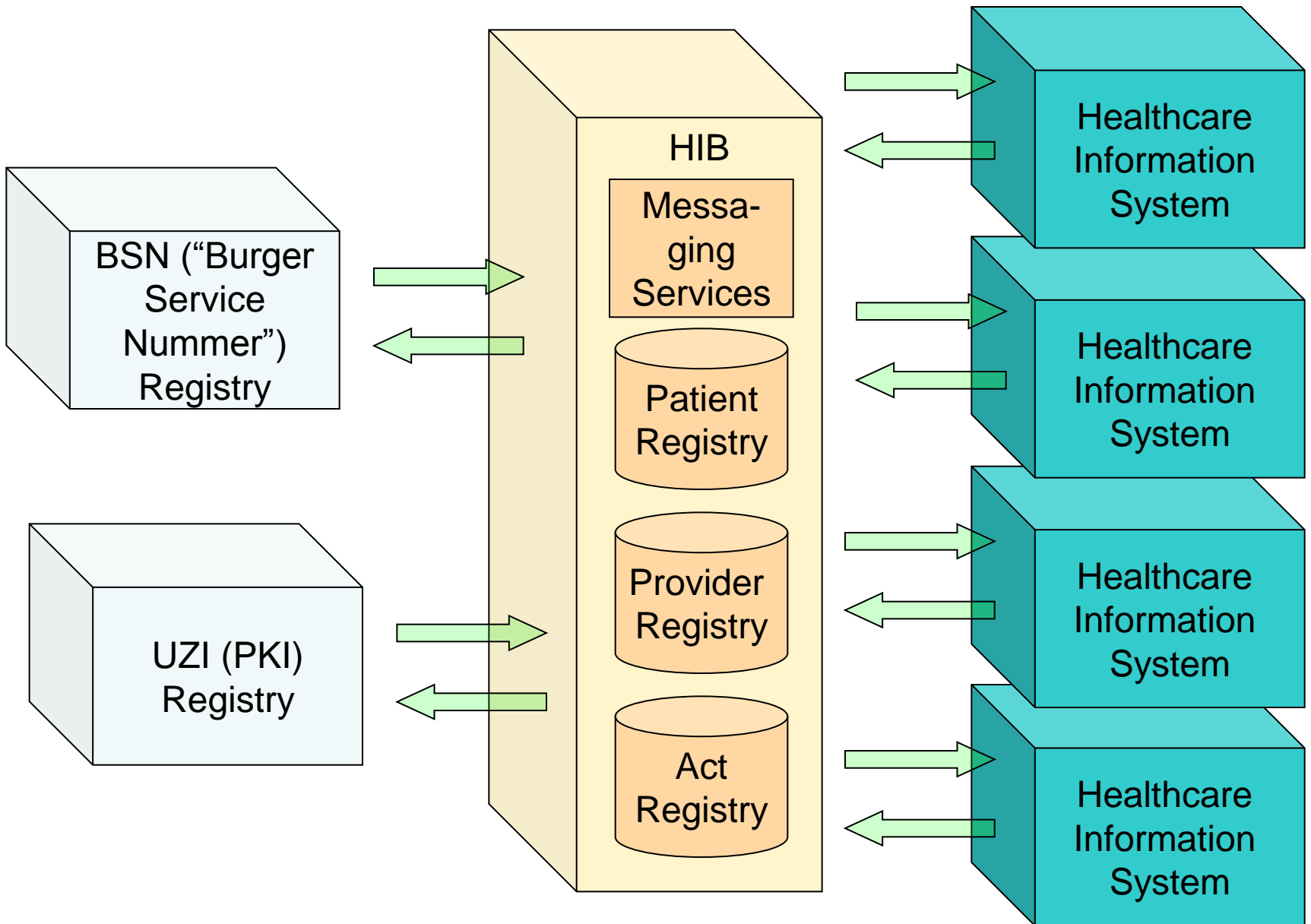
“Burger Service Nummer”

- Unique Id for every Dutch person
- Based on social security number
- Law is amended to permit use in care
- Maintain BSN Registry
- Provide access to registry
 - query for BSN based on name, address, birthdate
 - query for name, address, birthdate based on BSN
 - Web Service
 - direct and through HIB / HL7v3

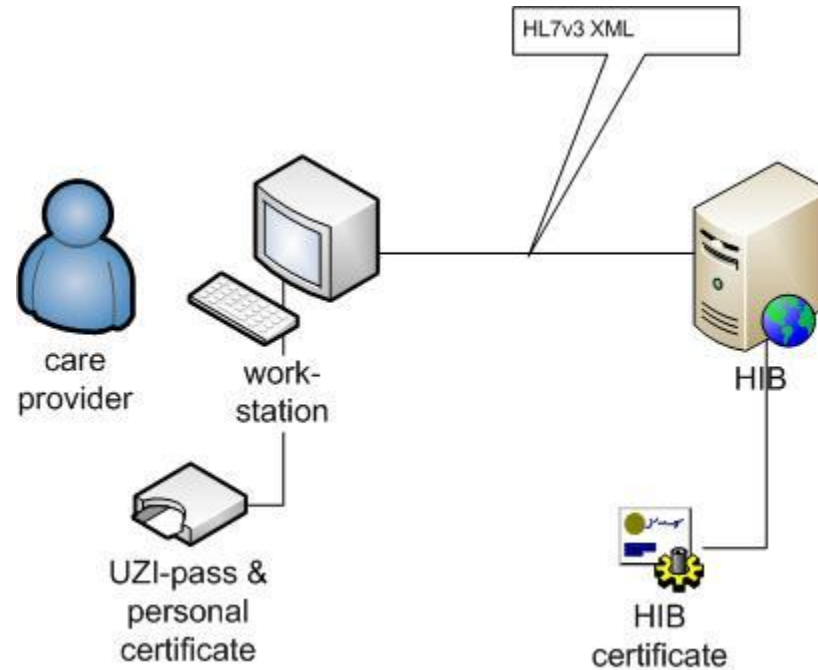


HIB (Healthcare Information Broker)

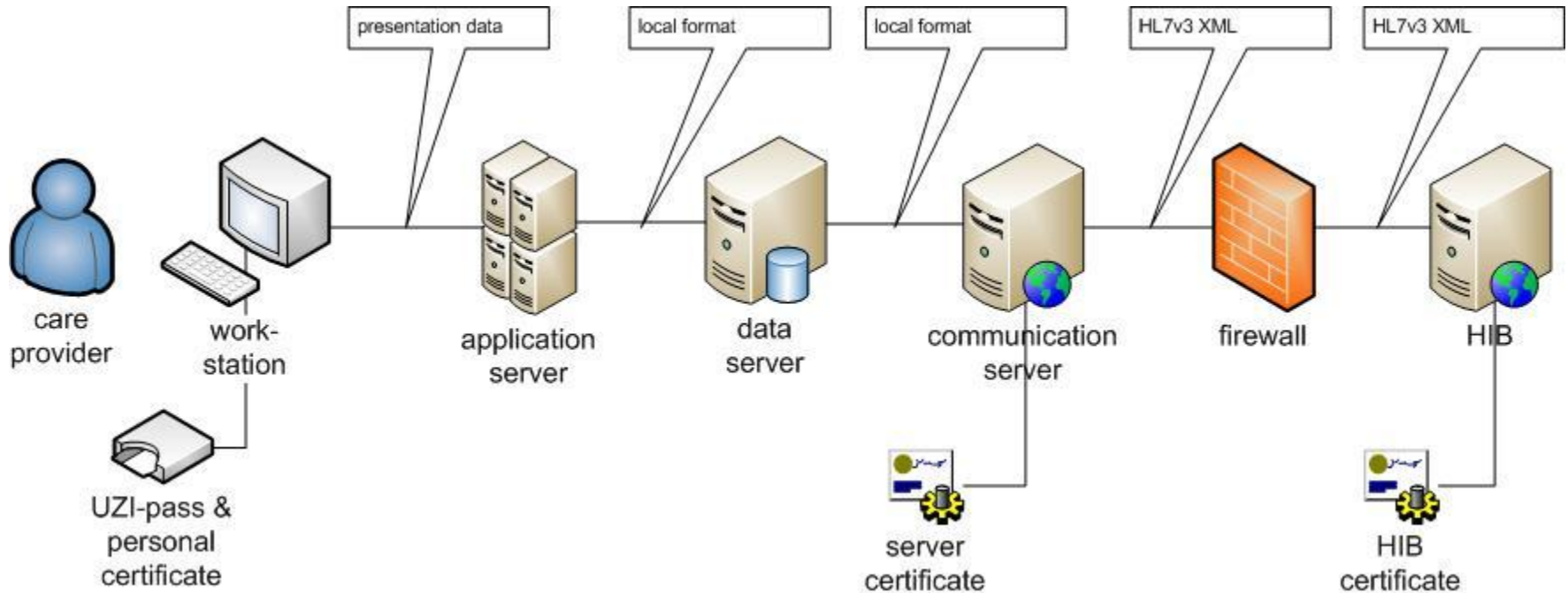
- Routing of messages between HIS's
- Act Registry: which HIS has information on which patient for which kind of data
 - add/change/delete Act Information
- Patient Registry (partly gateway to BSN)
- Provider Registry (partly gateway to UZI)
- Collection of query data
- Logging, access control
- VPN based, TCP/IP, HTTP network



Infrastructure example



Actually, it's not that simple...



Healthcare Information Systems

- Must qualify “Well Maintained HIS”
 - performance, security, maintenance, uptime etc.
- Implement National Guidelines
- Do logging
- Do local authorizations