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EVALUATION OF ELECTRONIC HEALTH RECORD SOLUTIONS

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CORPORATE CIO,

MEDICAL SERVICES DEPARTMENT

MOD

AGENDA

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THE PROJECT

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EVALUATION METHODOLOGY

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FINDINGS & CONCLUSION

AGENDA

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FINDINGS & CONCLUSION

THE PROJECT

TO:


- ▶ Evaluate the feasibility of unifying Health Information Systems across medical cities and hospitals.
- ▶ Analyze and propose the best EHR candidates and demonstrate their strength and weaknesses.



COMMITTEE MEMBERS

- ▶ **King Khalid Eye Specialist Hospital**
 - ▶ **King Fahad Specialist Hospital**
 - ▶ **Prince Mohamed Medical City**
 - ▶ **King Faisal Medical City**
 - ▶ **King Abdullah Medical City**
 - ▶ **King Fahad Medical City**
- 

RESEARCH METHODOLOGY

- ▶ Committee members have met several times.
 - ▶ Extensive research has been done based on facts and data from:
 - KLAS
 - HIMSS
 - Advisory Board
 - KFMC Clinical Survey
 - In addition to 13 research papers
 - Personal experience and knowledge
 - ▶ KFMC team has proposed a methodology that was adopted by the committee
 - ▶ A spreadsheet has been distributed to capture inputs
 - ▶ A report, excel sheet, and a presentation have been generated
- 

AGENDA

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THE ASSIGNMENT

2

BACKGROUND

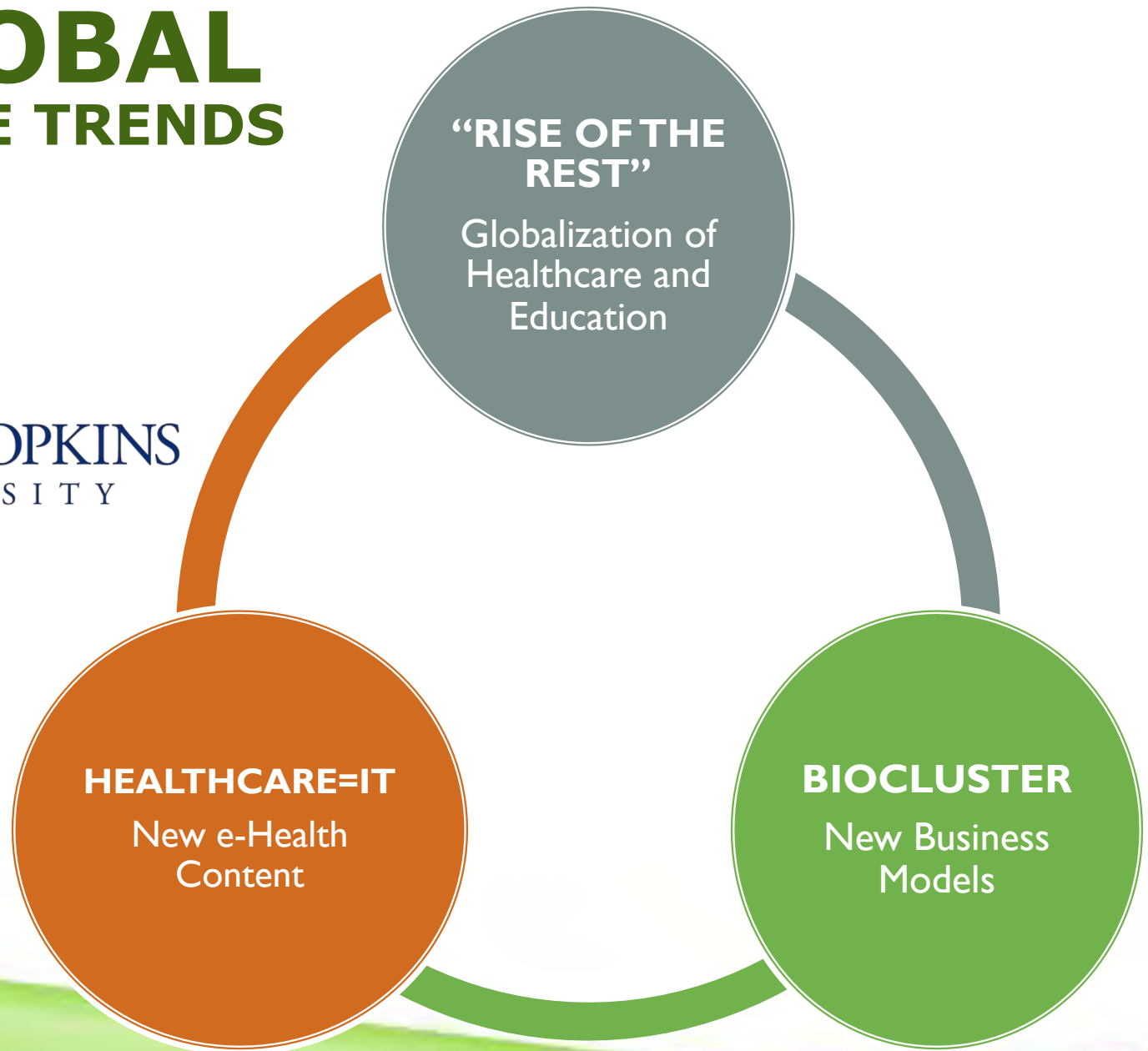
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EVALUATION METHODOLOGY

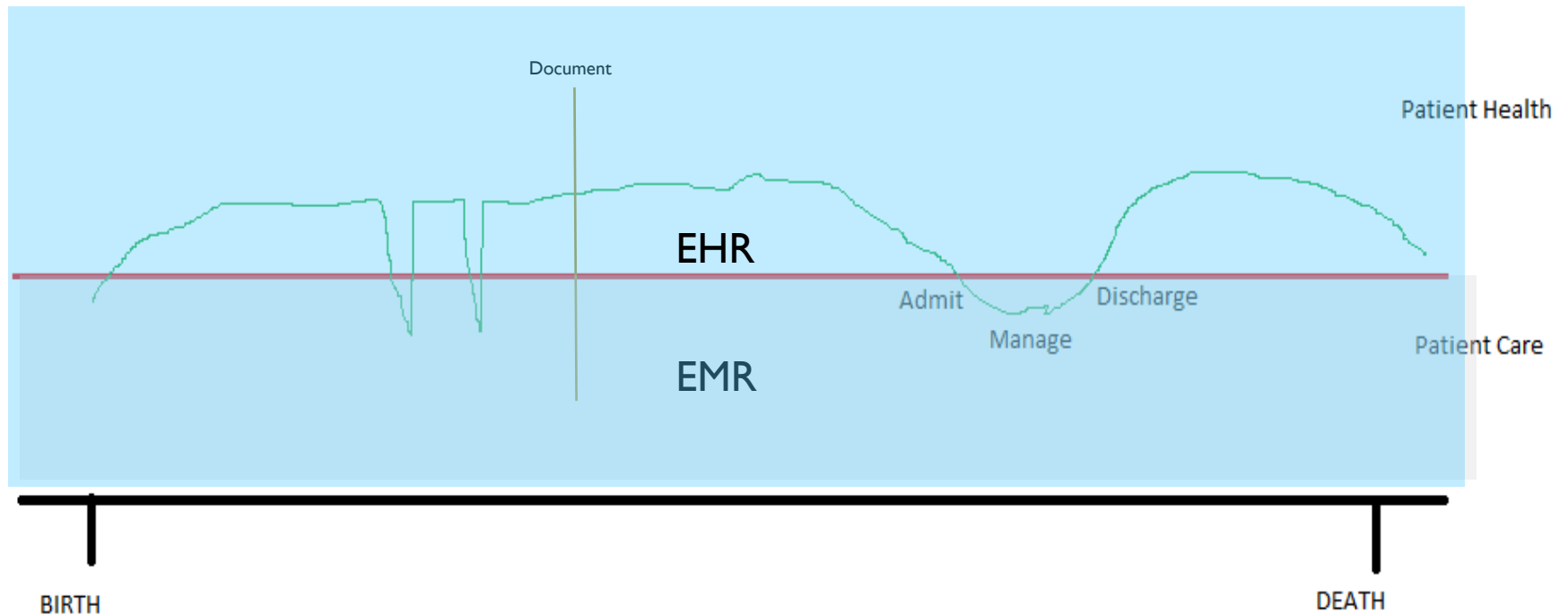
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FINDINGS & CONCLUSION

THREE GLOBAL HEALTHCARE TRENDS



THE LIFE OF THE PATIENT



**THE GOAL
IS TO
ENFORCE:**

Standards

Content

Workflow

Expertise

Analytics

HIMSS EMR ADOPTION MODEL MIDDLE EAST / ASIA

EMR Adoption ModelSM

Stage	Cumulative Capabilities
Stage 7	Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), Closed Loop Medication Administration
Stage 5	Full complement of Radiology PACS
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging; HIE capable
Stage 1	Ancillaries – Lab, Rad, Pharmacy - All Installed
Stage 0	All Three Ancillaries Not Installed

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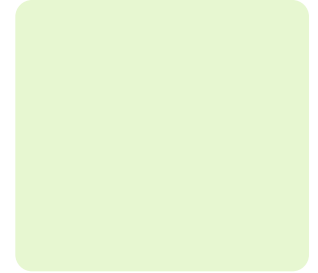
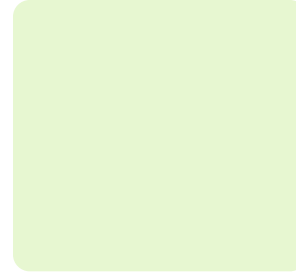
FINDINGS & CONCLUSION

CANDIDATE SELECTION

The vendor candidates were selected based on:

- ▶ Ability to provide a full suite (integrated) of products on a single platform to serve the continuum of care
 - ▶ Strong capability to provide clinical systems (not an IT shop)
 - ▶ Evidence of advancing their systems and service capabilities on a continuous base
 - ▶ Verbal willingness and commitment to contribute to the Middle East in general and to our local market in Saudi Arabia in particular
 - ▶ Place us at HIMSS L6 OOB
- 

IDENTIFIED CANDIDATES



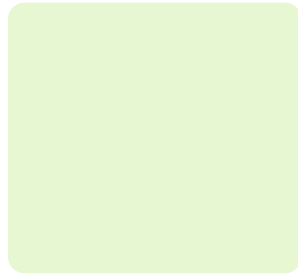
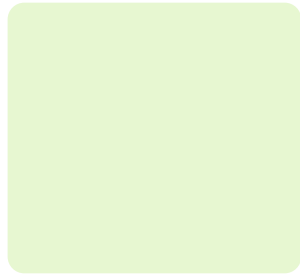
- Privately owned by Judith R. Faulkner and based in Verona, Wisconsin,
- \$1.526 billion for 2012 revenue
- 6400 employees based in its campus in Verona.
- As of April 2014
 - 297 organizations that would represent 1100 hospitals, 14000 clinics, and 265000 physicians.
 - Key Clients: Calif.-based Kaiser Permanente, Cleveland Clinic, Johns Hopkins Medicine in Baltimore, UCLA Health in Los Angeles, Arlington-based Texas Health Resources, and Mount Sinai Health System in New York City
 - EPIC has the most stage 7 hospitals /clinics

IDENTIFIED CANDIDATES



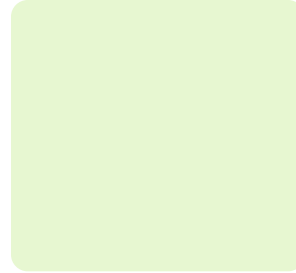
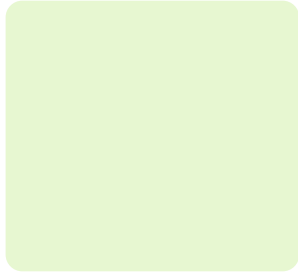
- Allscripts is a publicly traded company, found in 1986 and based in Chicago, Illinois.
- The current company is the result of M&A
- More than 7000 employees with an estimated revenue in 2012 of \$1.45 billion.
- Key clients: Bronx-Lebanon (NY), Blessing Hospital (IL), Springhill Medical Center (AL), and United Hospital System (WI)

IDENTIFIED CANDIDATES



- Cerner is a public company founded in 1979
- Based in Kansas City, Missouri with 14000 employees and a market capitalization of \$13 billion.
- 2329 sites globally
- Key Clients: Banner Health (AZ), UPMC (PA), Sharp Healthcare (CA), and Dignity Health (CA), with about 90 clients in the Middle East

IDENTIFIED CANDIDATES



- InterSystems is a privately owned company that was founded in 1978
- One of the original vendors of M-technology aka MUMPS systems
- Developer and Owner of well-known database technology, Cache
- The company has numerous sales office around the world except in U.S.
- 499 hospitals contracted for its solution with significant growth in Scotland and Chile.
- Several sites in the Middle East

GOING DEEPER

Six dimensions have been identified:



WE ALSO CONSIDERED



Total Cost of
Ownership
(TCO)

KFMC Clinical
Survey (4v)



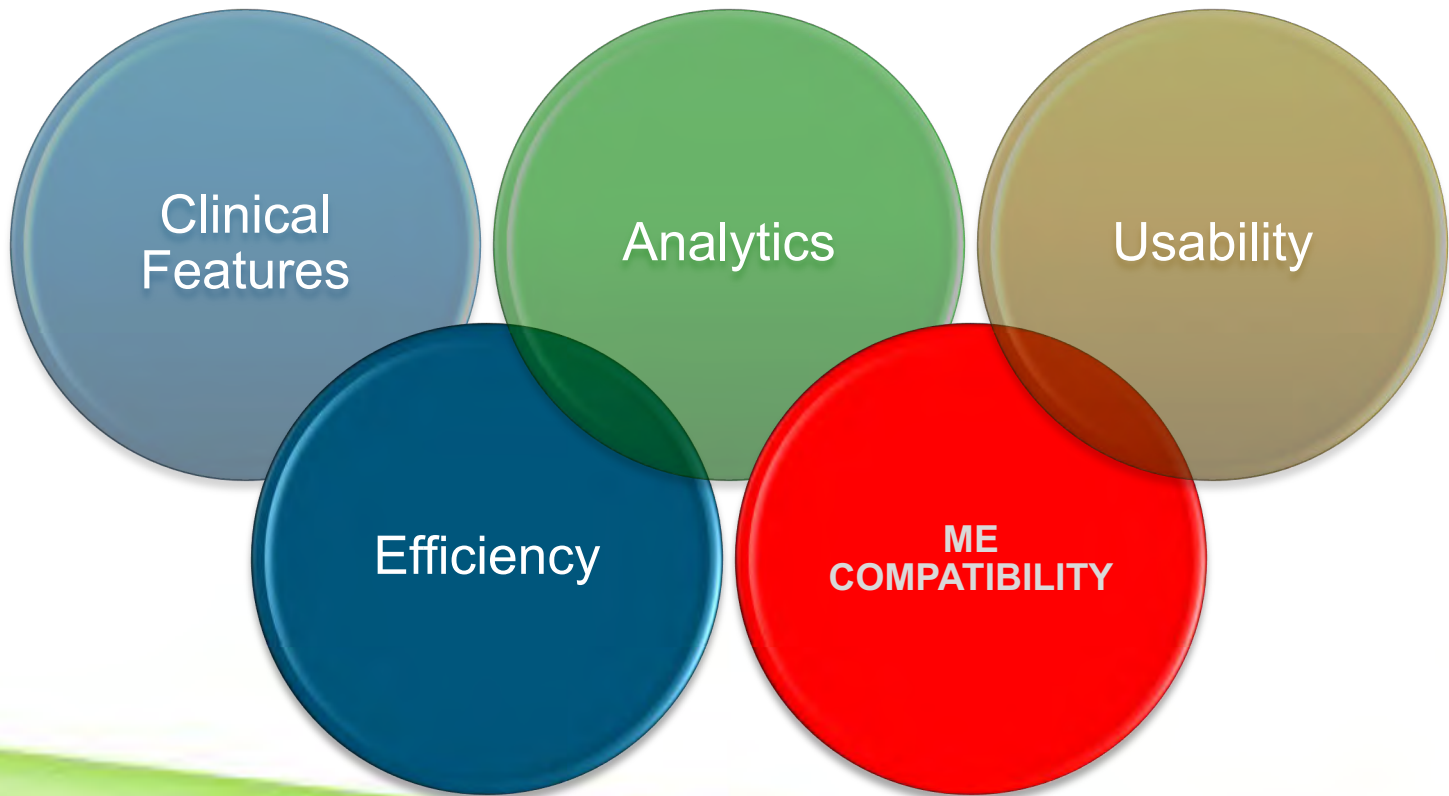
GOING DEEPER

Six dimensions have been identified:



PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:



PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:

CLINICAL FEATURES

ANALYTICS

EFFICIENCY

USABILITY

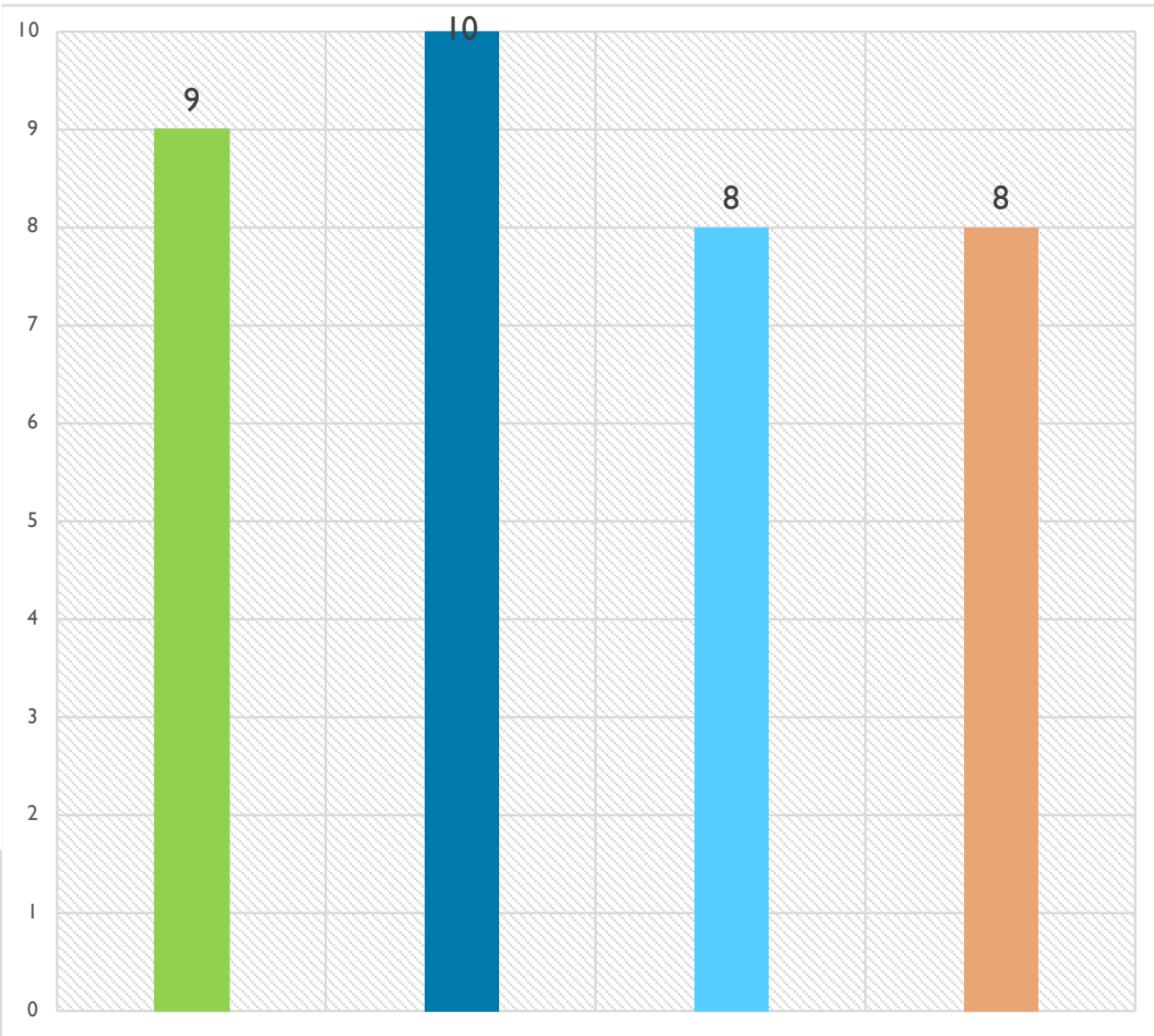
ME COMPATIBILITY

- Core Clinical
- Ancillaries
- Specialties
- e-Prescription
- Medication Reconciliation
- Ambulatory Care

CORE CLINICAL

This is the engine of the system where clinical pathway and best practices are initiated. It refers to

- Computerized Provider Order Entry (CPOE)
- Order sets
- Medication orders
- Laboratory orders
- Radiology orders



ANCILLARY

The helping arm components that facilitate CPOE requests

- Surgery / OR
- Pharmacy
- Laboratory
- Radiology Information System

SPECIALTIES

Special clinical areas

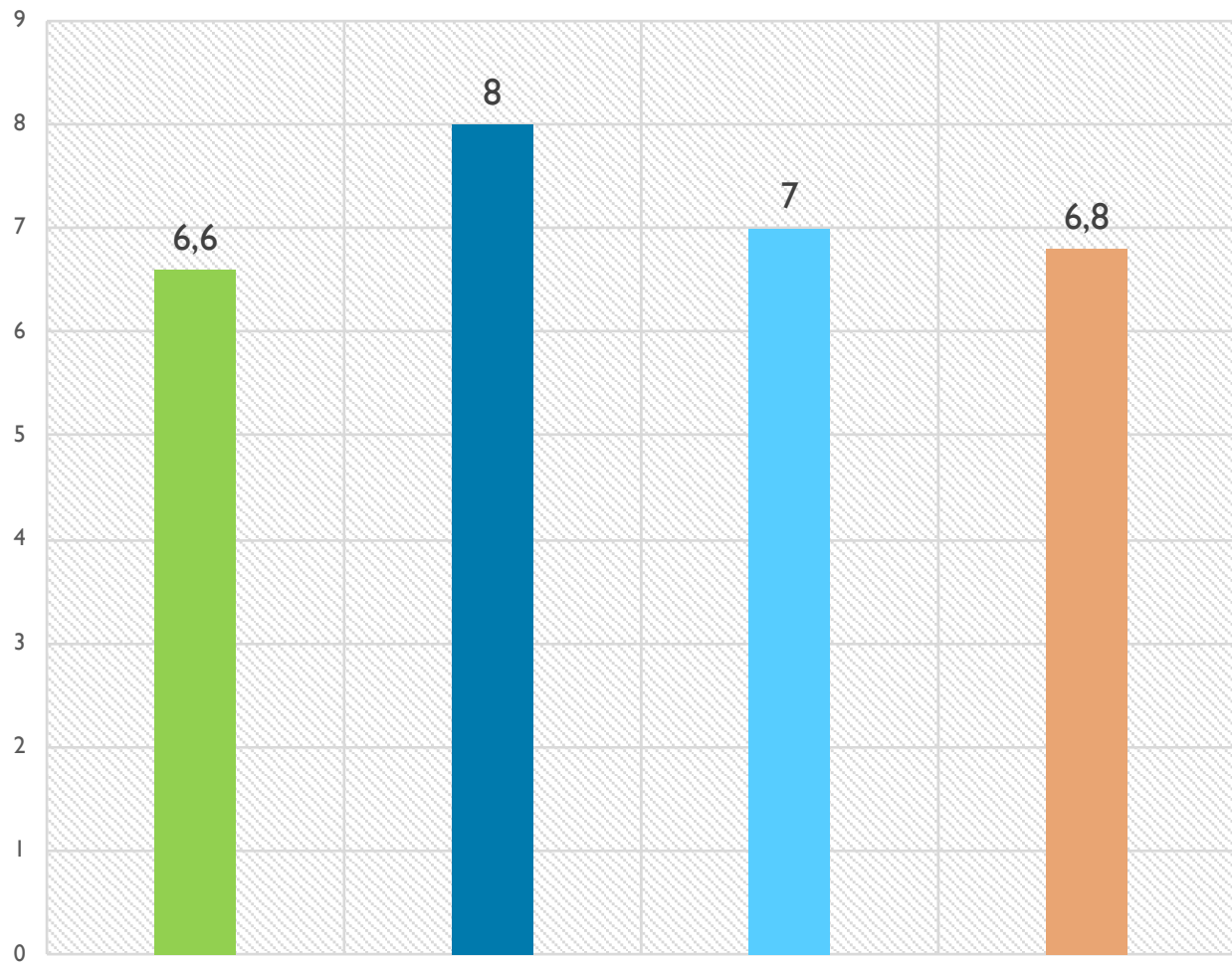
- ICU
- Emergency
- Cardiology
- Diabetes
- Oncology
- Women
- Pediatric

e-PRESCRIPTION

Enable providers to write an accurate and error free electronic medication prescription.

MEDICATION RECONCILIATION

The process of comparing a patient's medication orders to all of the medications that the patient has been taking.”



AMBULATORY CARE

Covers OPD area including diagnosis, observations, treatment, and rehabilitation services.

PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:

CLINICAL FEATURES

ANALYTICS

EFFICIENCY

USABILITY

ME COMPATIBILITY

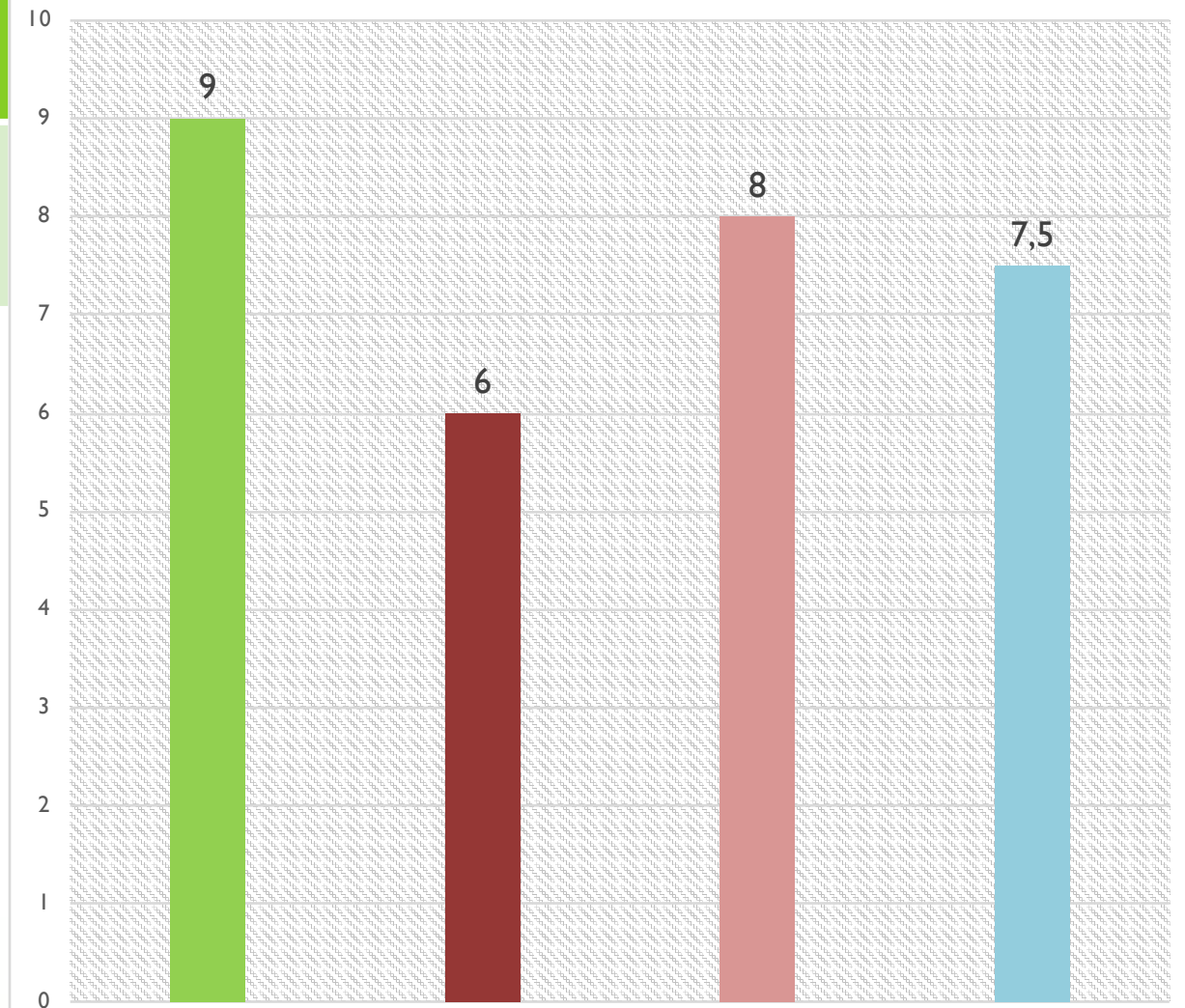
- Clinical Decision Support (CDS)
- Business Intelligence

CLINICAL DECISION SUPPORT

- Analytical data about the clinical workflow in the hospital

BUSINESS INTELLIGENCE

Where you analyze operational, financial, and quality control data (CA).



PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:

CLINICAL FEATURES

ANALYTICS

EFFICIENCY

USABILITY

ME COMPATIBILITY

- Care Management
- View Patient Information
- Physician Documentation
- Problem List
- Mobility
- Patient Engagement

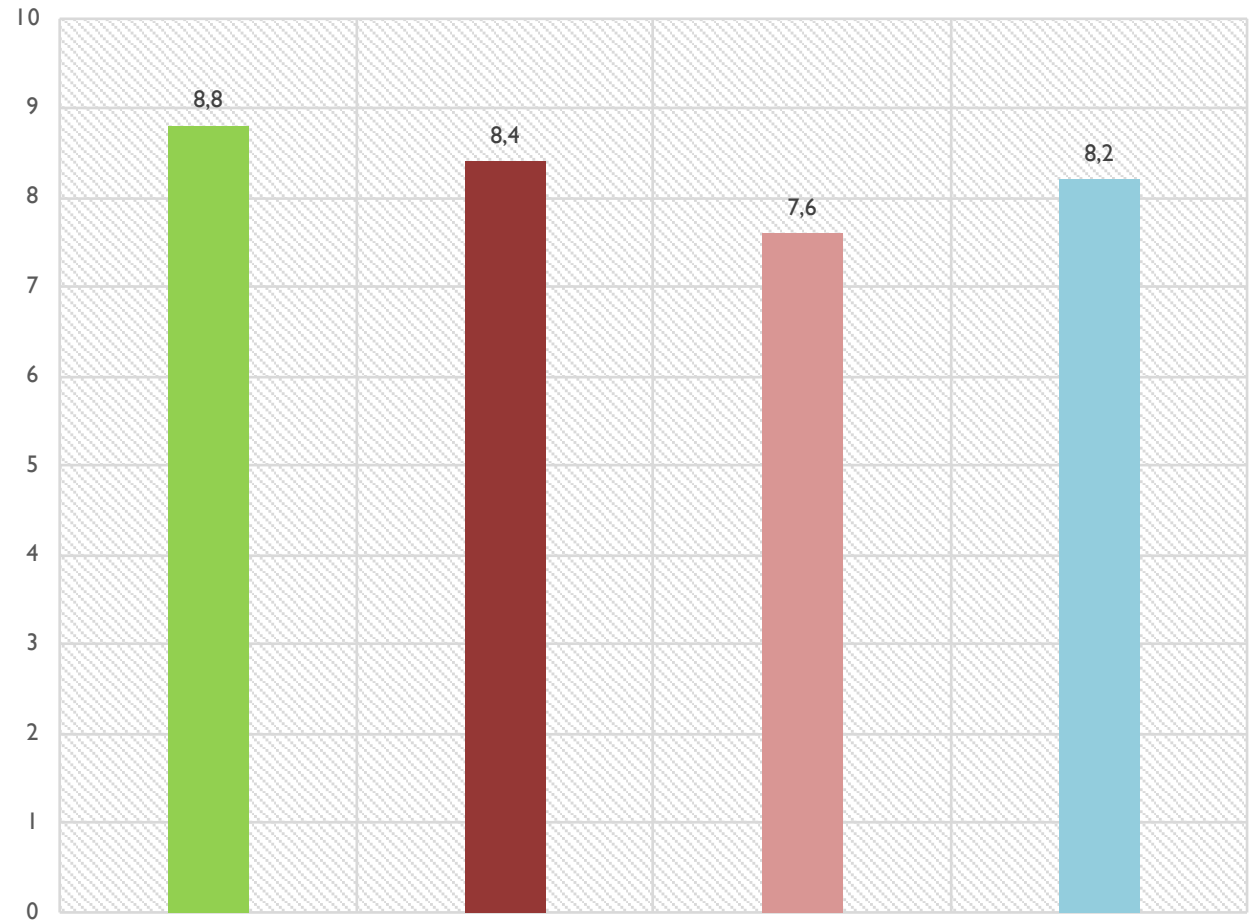
CARE MANAGEMENT

Enables providers to set clinical plans and goals for patients who suffer long-term, multiple chronic conditions that would result in high cost of care.

VIEW PATIENT INFORMATION

Enabling healthcare providers to navigate patient information for efficient and effective clinical decisions.

View Patient Information



PATIENT DOCUMENTATION

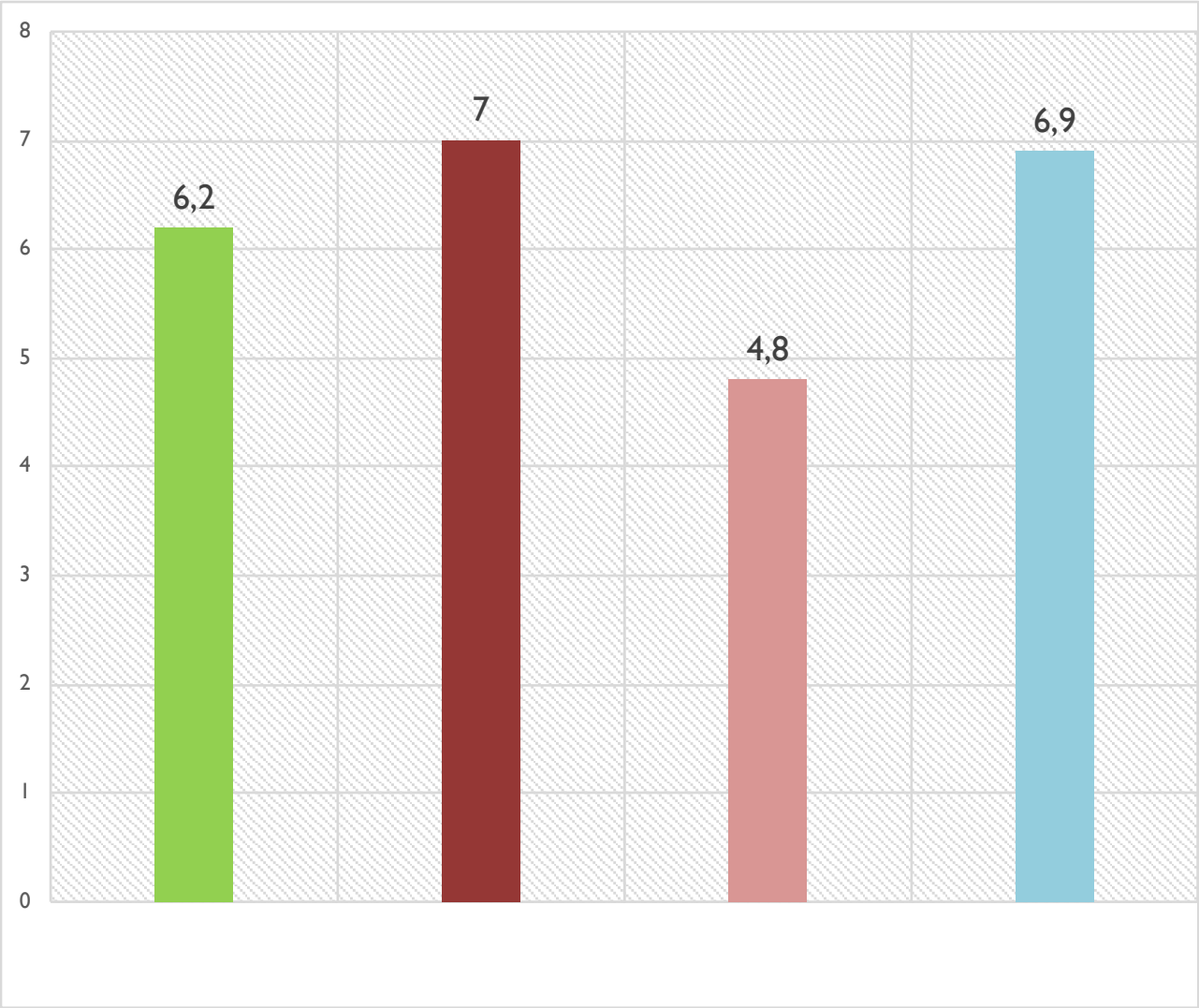
Enabling physicians to document patient information via different methods such as typing and voice recognition.

PROBLEM LIST

JCI Accreditation requirement,
to capture a complied list of
clinically relevant physical and
diagnostic concerns and
procedures that may affect the
health status and care of
patients.

MOBILITY

Ability to access patient care on mobile devices from anywhere whether inside/outside the medical facilities.



PATIENT PORTAL

A web based tool to engage patients in their healthcare treatment

PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:

CLINICAL FEATURES

ANALYTICS

EFFICIENCY

USABILITY

ME COMPATIBILITY

➤ Ease of Use

EASE OF USE

A system with good usability is easy to use and effective. It is intuitive, forgiving of mistakes and allows one to perform necessary tasks quickly, efficiently and with a minimum of mental effort” HIMSS

PRODUCT

The product dimension measures the capability of the EHR solution in terms of meeting the clinical business needs:

CLINICAL FEATURES

ANALYTICS

EFFICIENCY

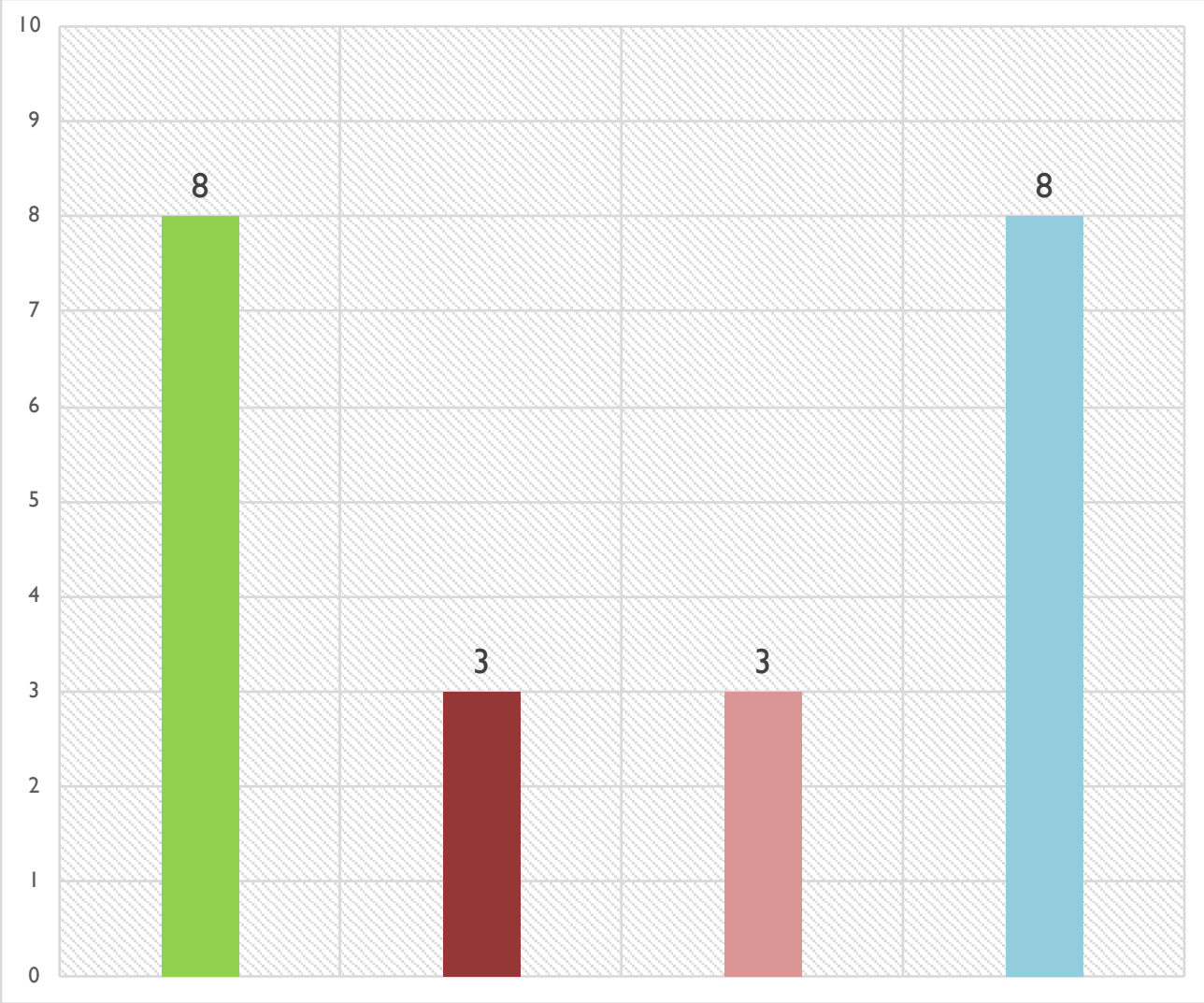
USABILITY

ME COMPATIBILITY

- System Localization
- System Arabization

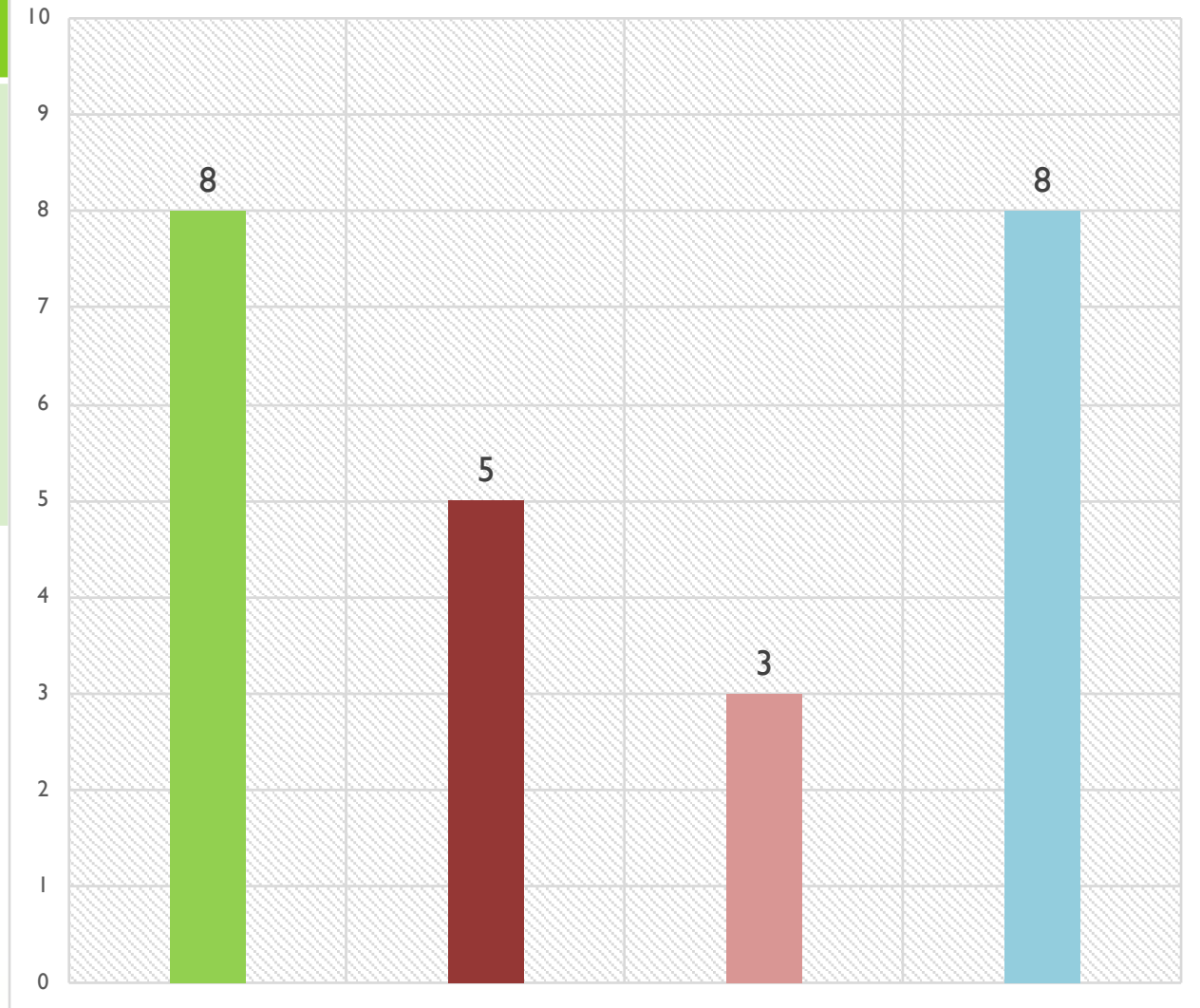
SYSTEM LOCALIZATION

- The ability to use:
- Hijri calendar
 - Ramadan Scheduling



SYSTEM ARABIZATION

The capability to provide Birth Certificates, Death Certificates, medication instructions, and patient medical records in Arabic language

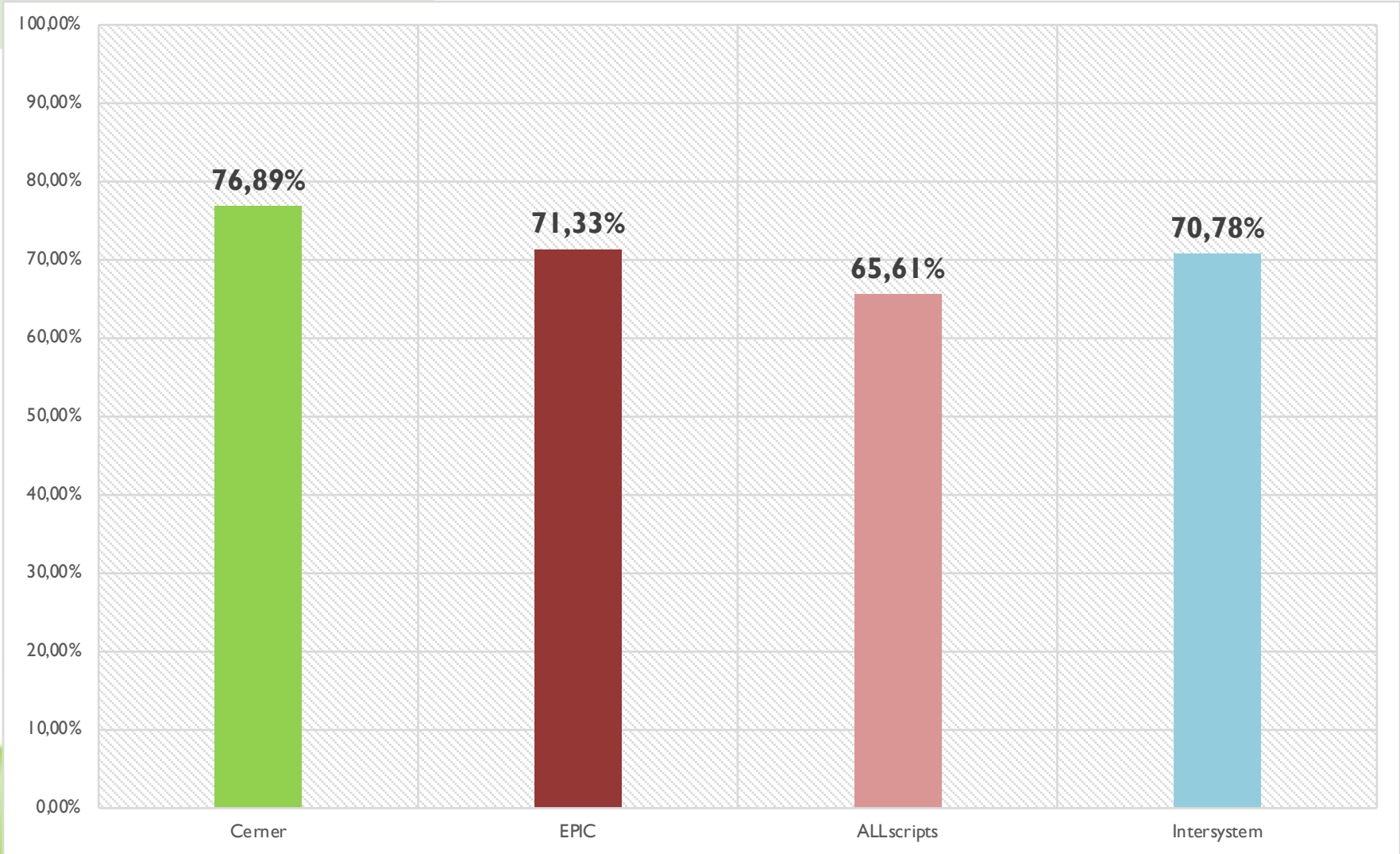


TOTAL SCORE

PRODUCT



PRODUCT TOTAL SCORE



GOING DEEPER

Six dimensions have been identified:



SERVICE & SUPPORT

Implementing EMR/EHR systems is a long-term project that require highly skillful team during the implementation of the project as well as the post implementation.

Responsiveness
to Client

Staff
Experience

Maturity of
Methodology

Quality of
Training

Senior Staff
Experience

Local Support in
the Region

Methodology of
Training

Support of
Process Change

RESPONSIVENESS TO CLIENTS' REQUEST

Measure the quality of communication and responsiveness to client requests

STAFF EXPERIENCE

It is crucial for project success that the vendor has experienced staff to lead the customer through implementation phase

MATURITY METHODOLOGY

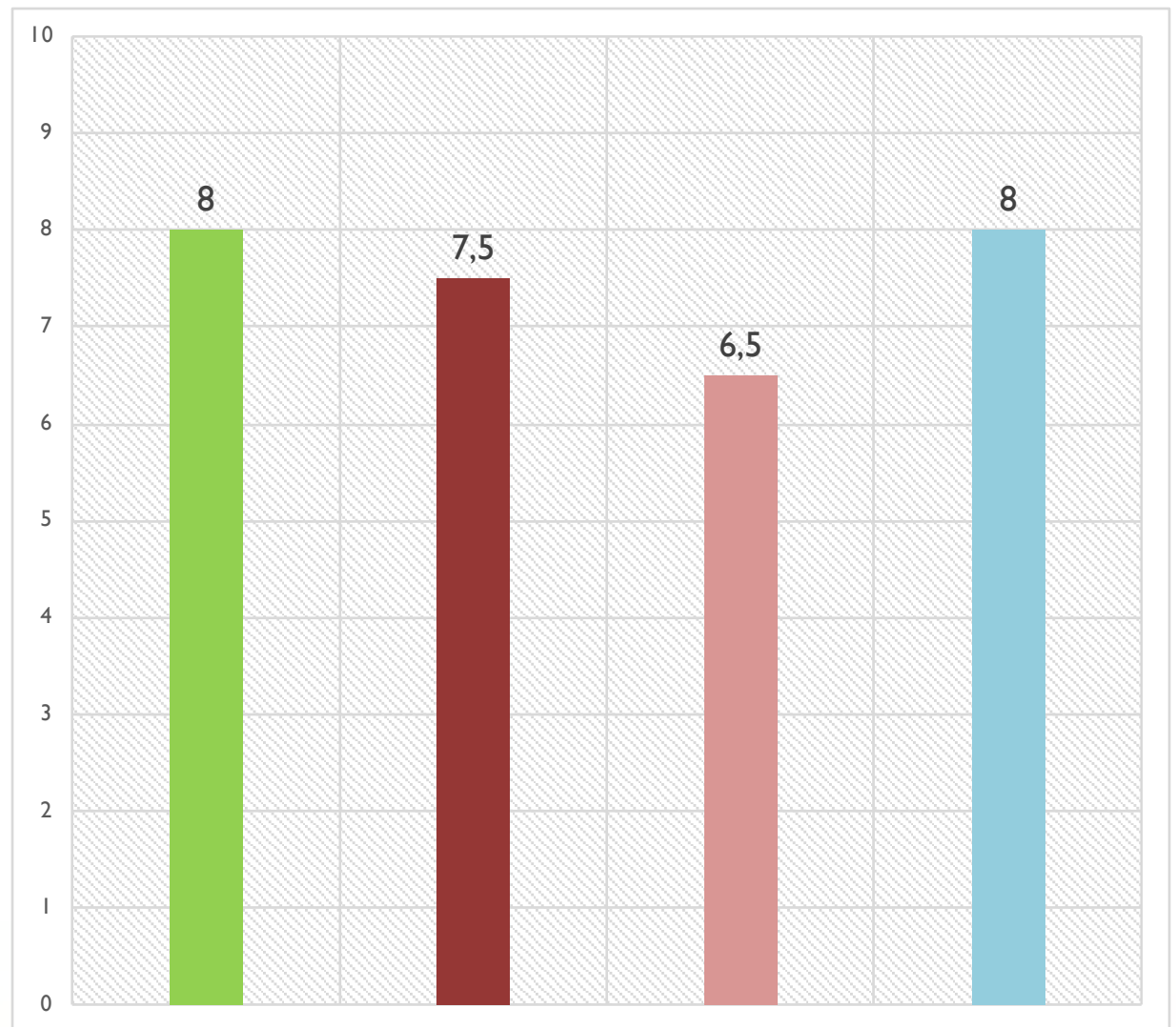
Several techniques and tools ought to be used for the implementation and support such as proper project management, adequate requirement gathering, and comprehensive testing methods

QUALITY OF TRAINING

Training medical staff on how to implement and use the system

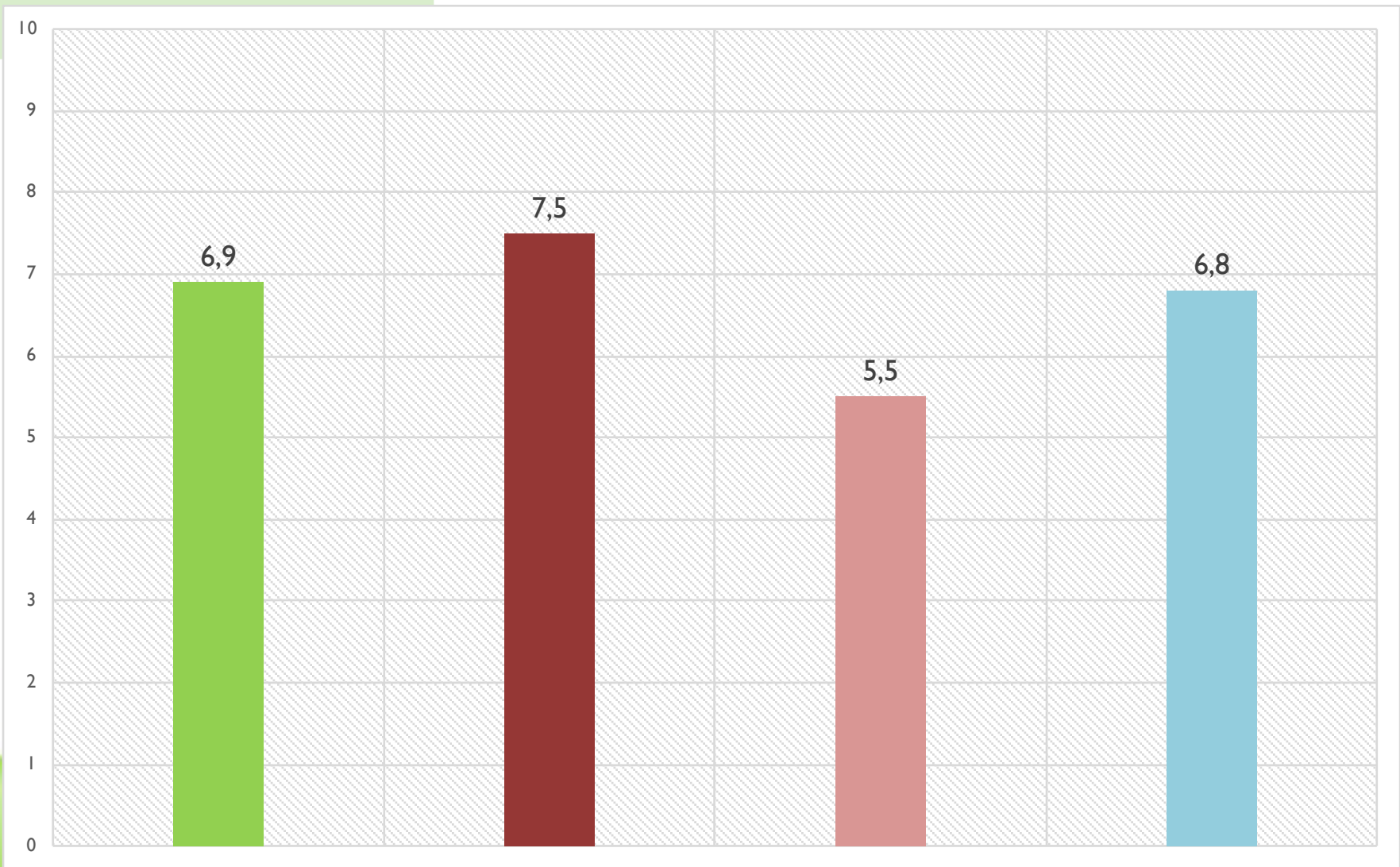
SUPPORT OF PROCESS CHANGE

The provided support to aid providers in configuring and customizing.



- 1) A
- 2) K 7.5

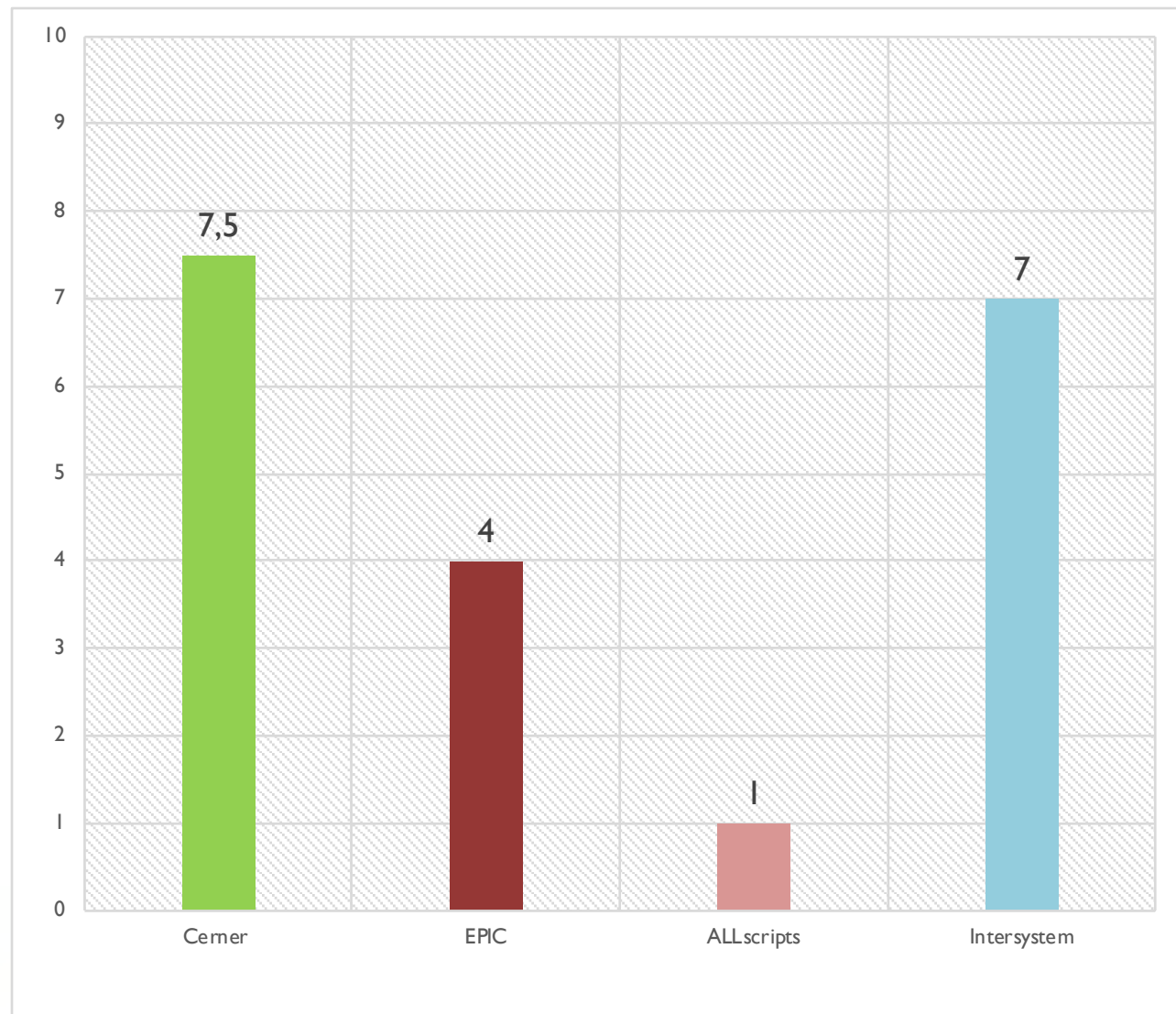
QUALITY OF IMPLEMENTATION



- 1) KL
- 2) KL 7.1

LOCAL SUPPORT

Vendors' presence in the region and alignment of time zone.



VENDOR EXECUTIVE INVOLVEMENT

- 1) KL
- 2) KL 7

TOTAL SCORE

SERVICE AND SUPPORT



TOTAL SCORE OF SERVICE AND SUPPORT



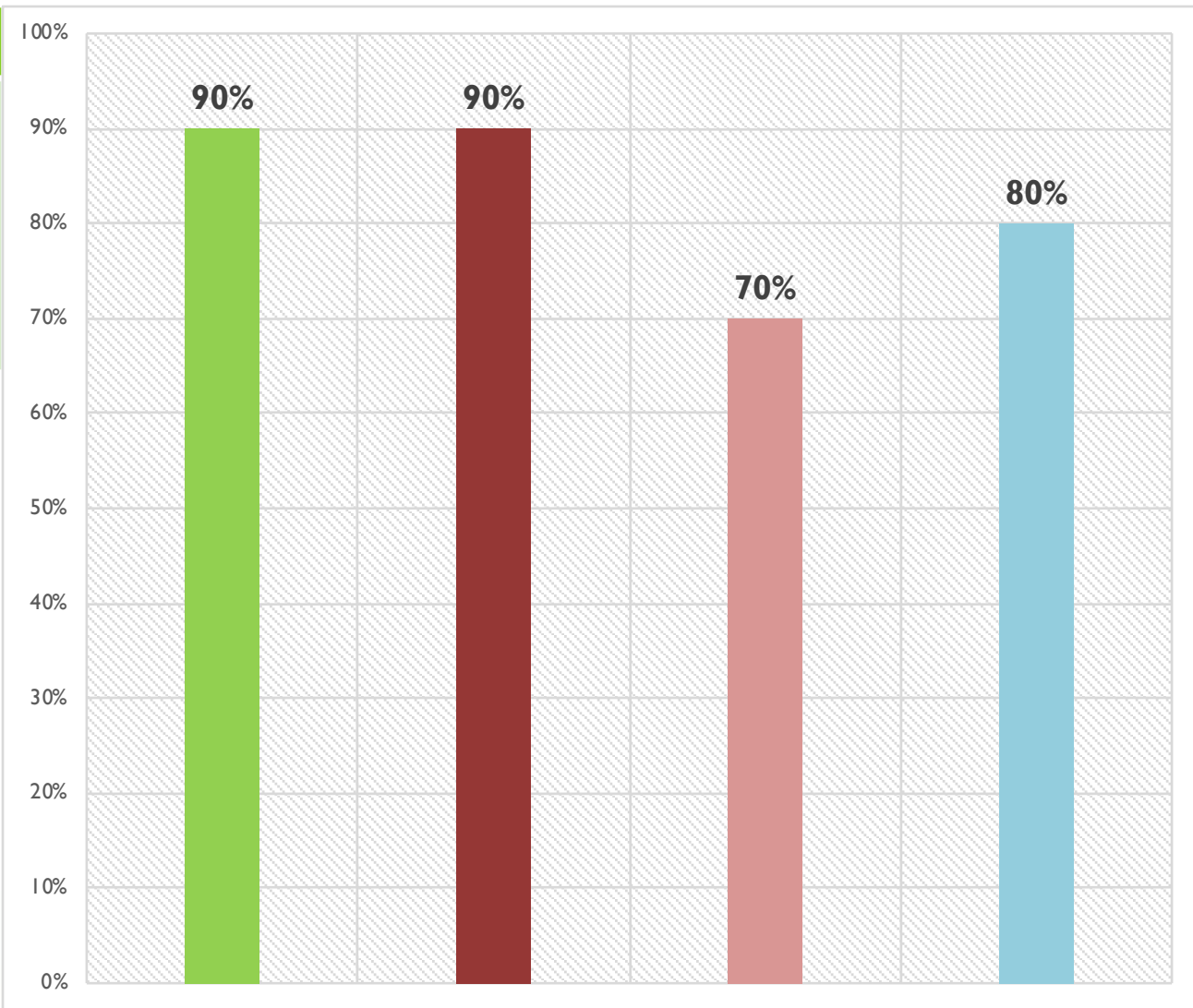
GOING DEEPER

Six dimensions have been identified:



VISION & LEADERSHIP

Stability of management as well as a clear vision, i.e. frequent changes of CEO and management team



1) A
2) A

GOING DEEPER

Six dimensions have been identified:



FINANCE & RESOURCE

Financial resource to compete
in the current market, i.e.
market share, R&D spending,
and the speed of growth for
each vendor

1) **A**
2) **A**

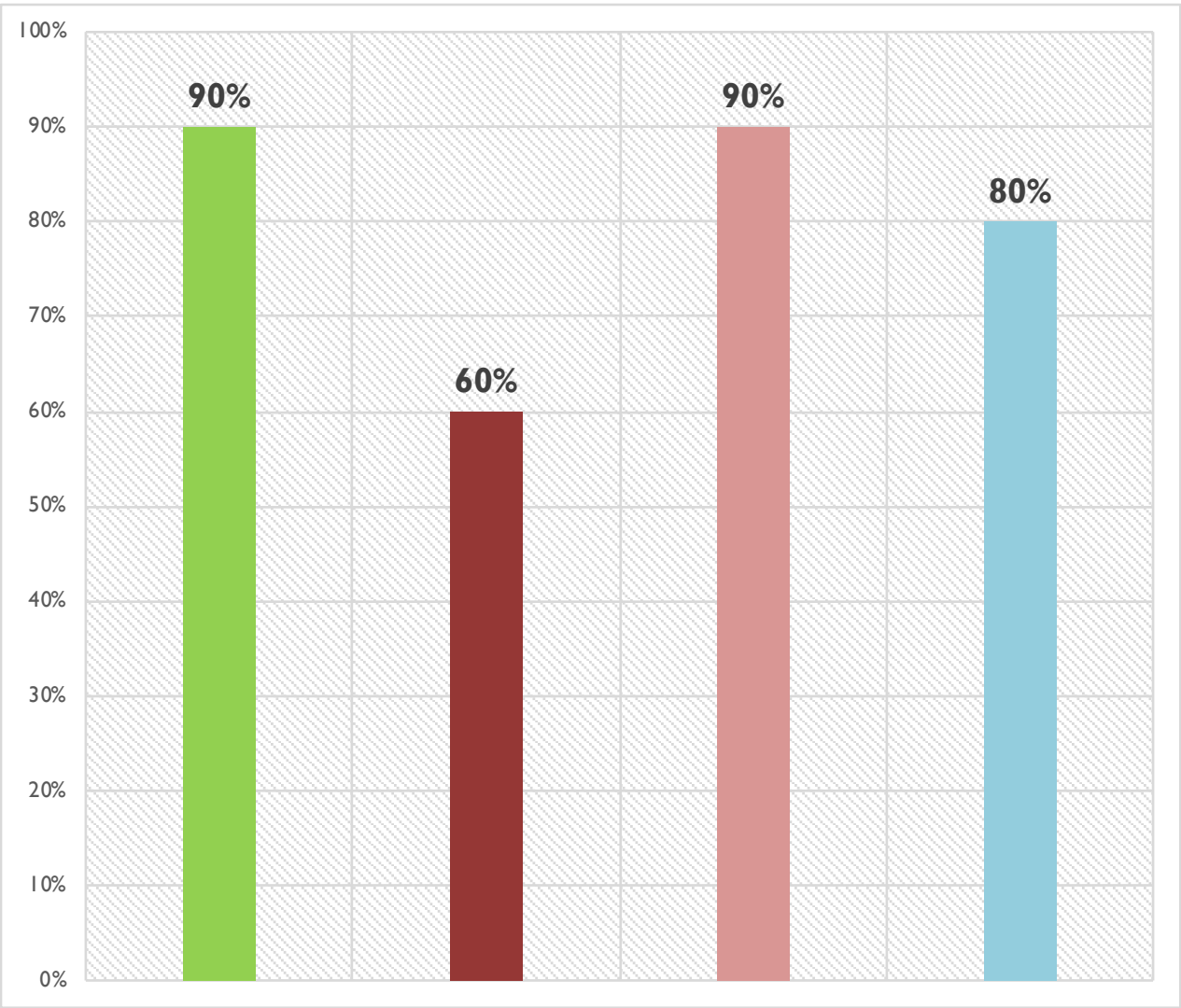
GOING DEEPER

Six dimensions have been identified:



ECOSYSTEM

The capability of each EMR / EHR in providing complementary programs and collaborations with third-party solutions



GOING DEEPER

Six dimensions have been identified:



TECHNOLOGY

Implementing EMR/EHR systems is a long-term project that require highly skillful team during the implementation of the project as well as the post implementation.

Accessibility of
Data

Programmability

Configurability

Interoperability

Upgrade-Safe
Extensibility

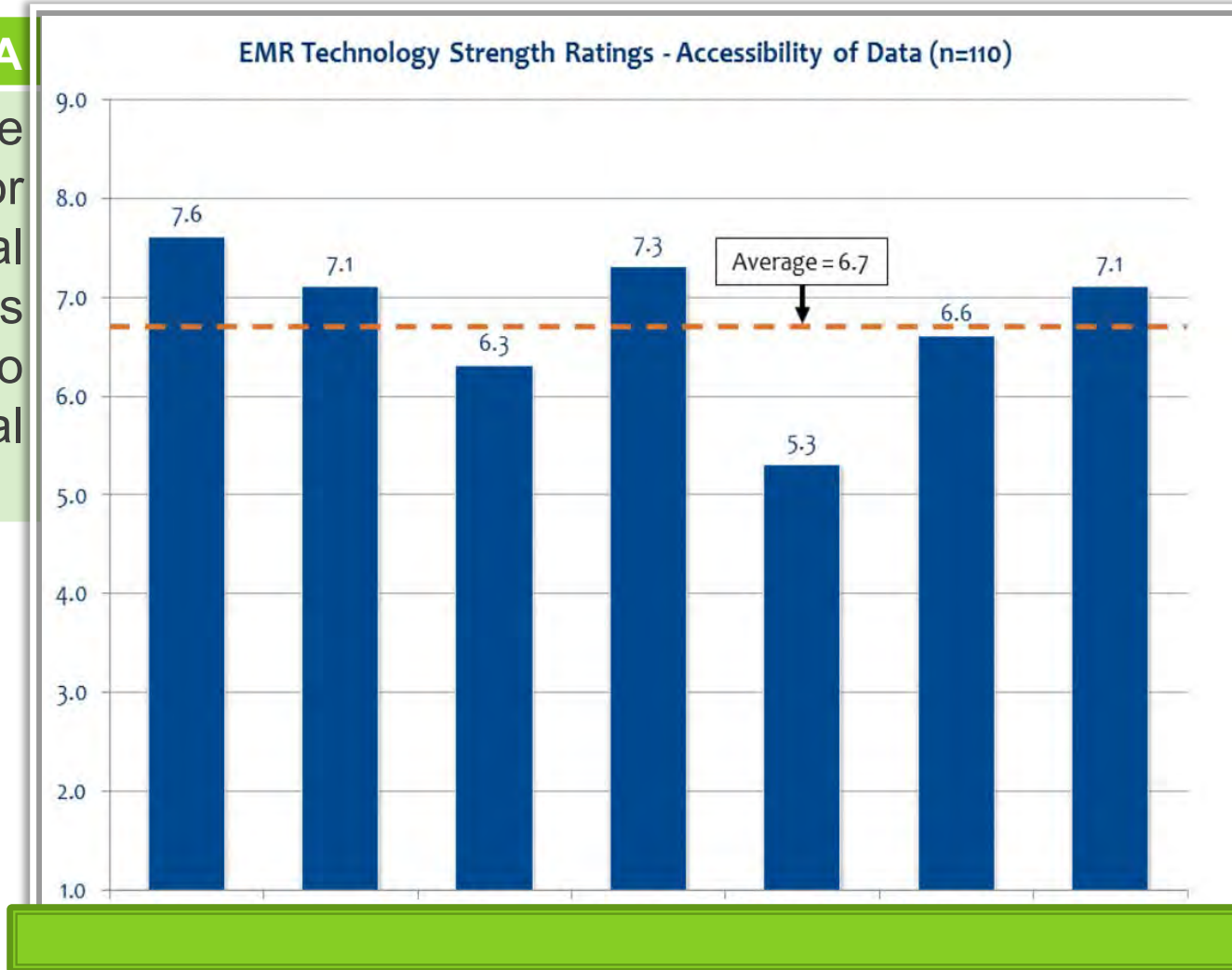
Virtualization

Scalability

Reliability and
Uptime

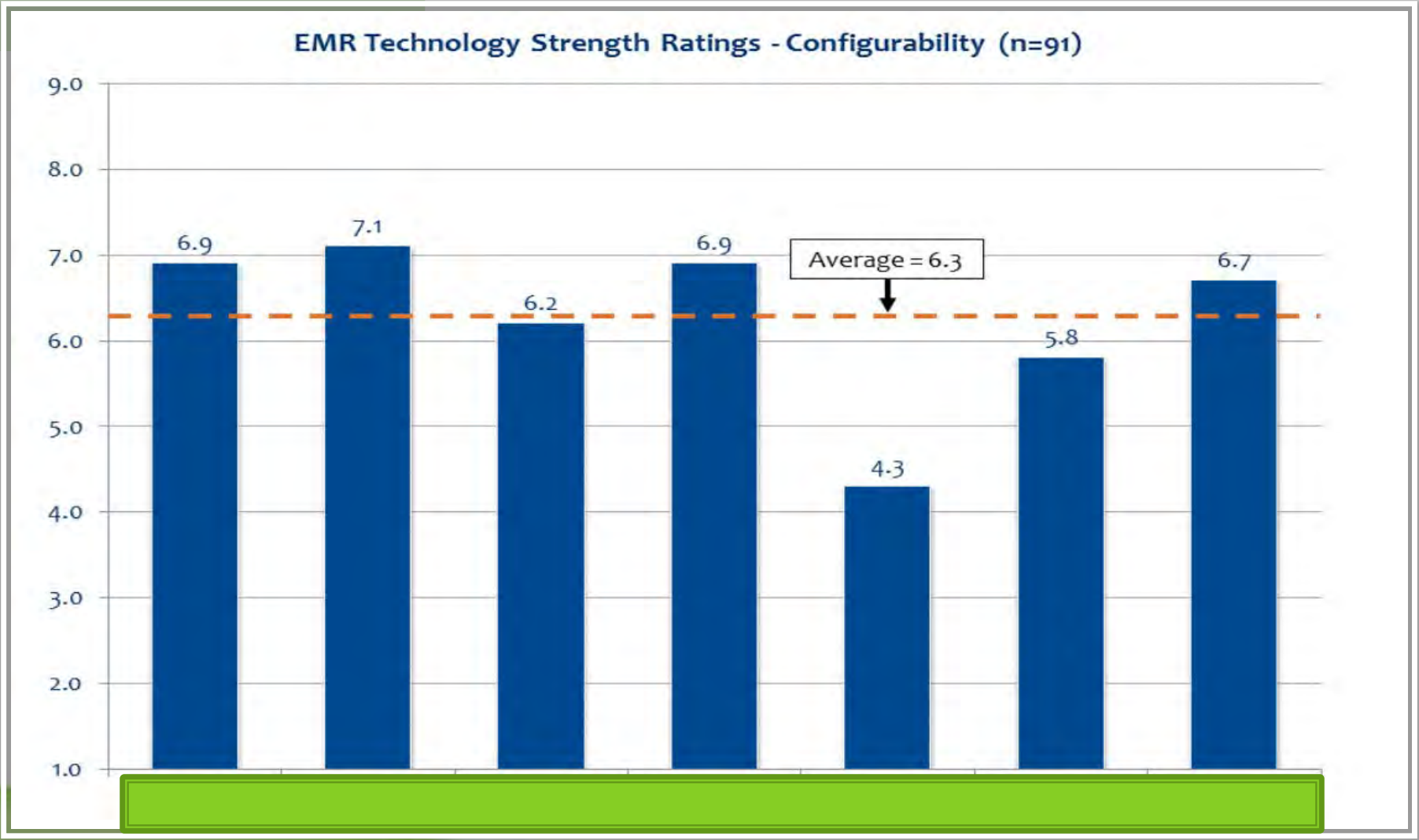
ACCESSIBILITY OF DATA

Ability to track multiple quality measures for internal and external reporting as well as analytical reports to improve clinical performance



- 1) KL
- 2) KL 6.7

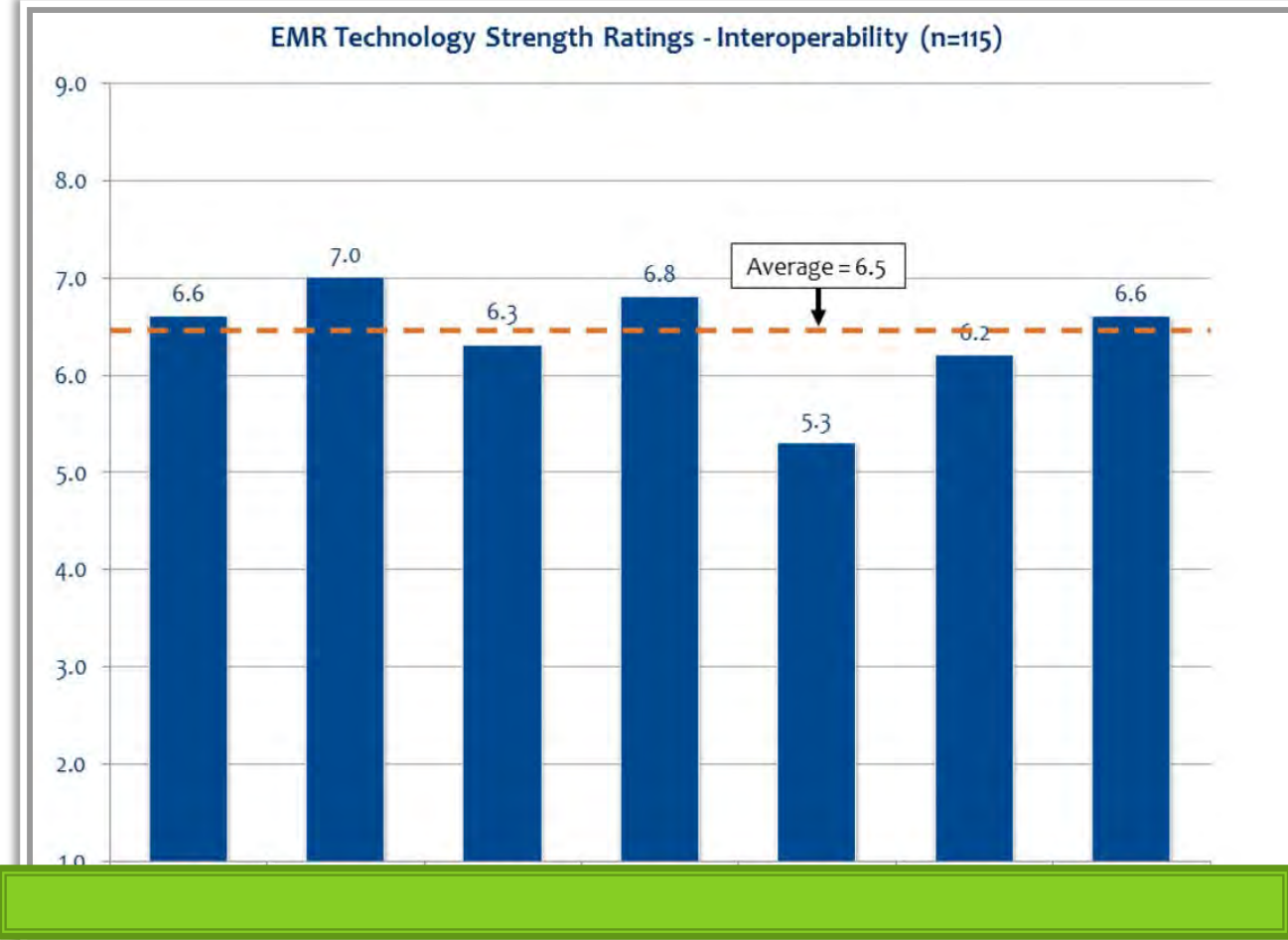
CONFIGURABILITY



- 1) KL
- 2) KL 6.3

INTEROPERABILITY

Ability to interact with other devices and systems

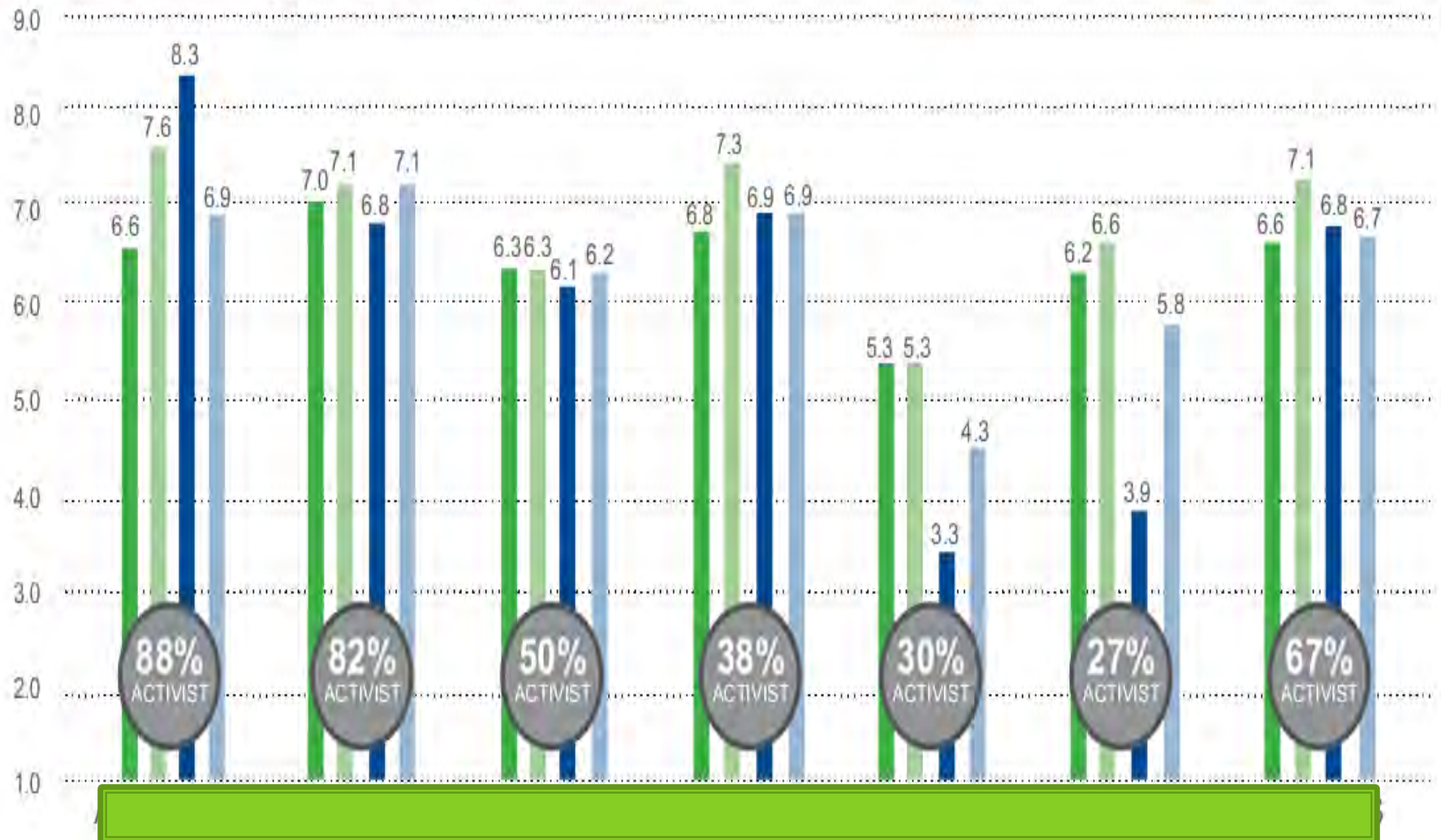


- 1) KL
- 2) KL 6.5

EMR TECHNOLOGY STRENGTH RATINGS

Activist = % of providers actively extending their EMRs

INTEROPERABILITY ACCESSIBILITY OF DATA
PROGRAMMABILITY CONFIGURABILITY



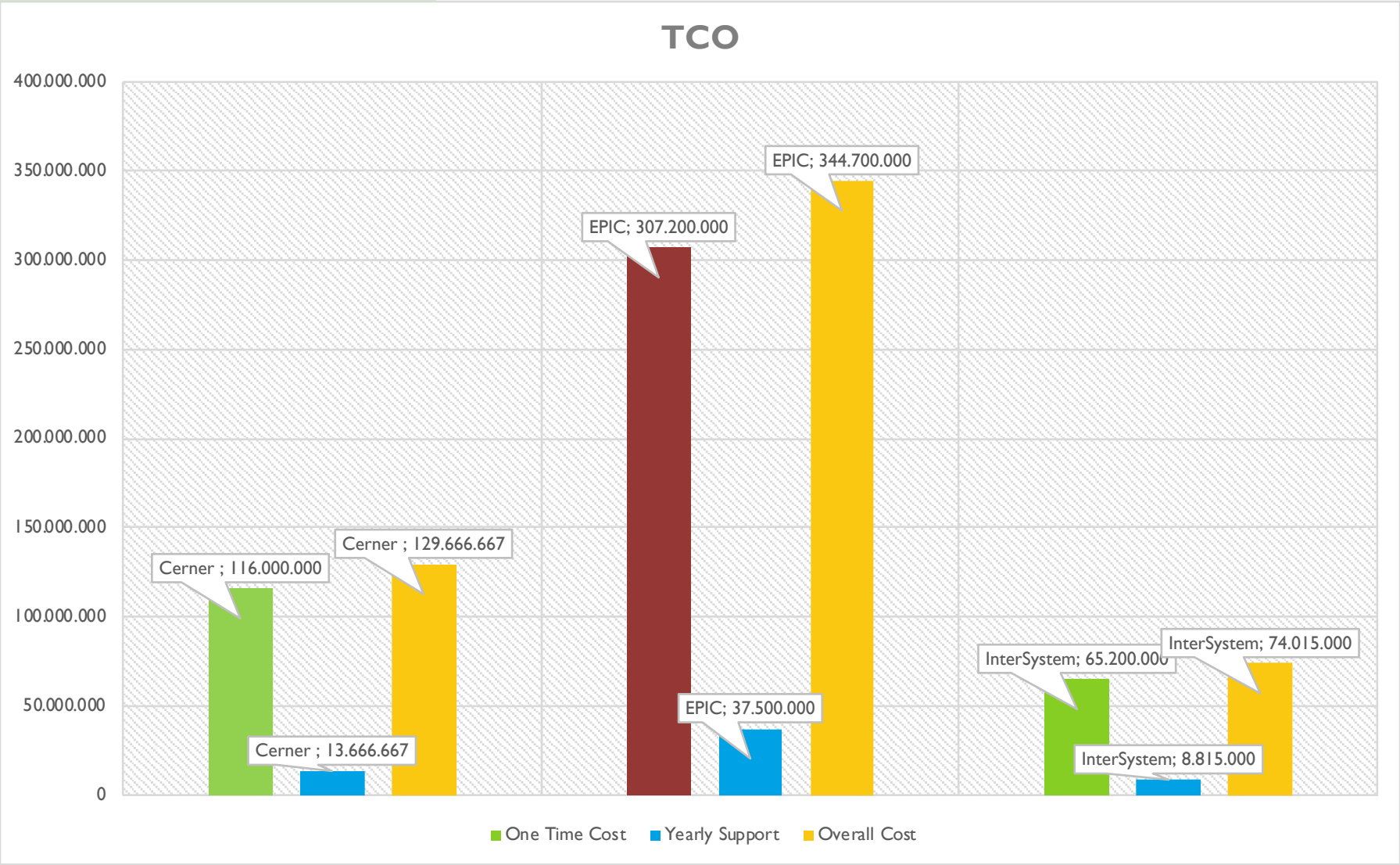
1) KL
2) KL

TOTAL COST OF OWNERSHIP

(TCO)



TOTAL COST OF OWNERSHIP (TCO)



KFMC CLINICAL SURVEY





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FINDINGS & CONCLUSION

OVERALL SCORE



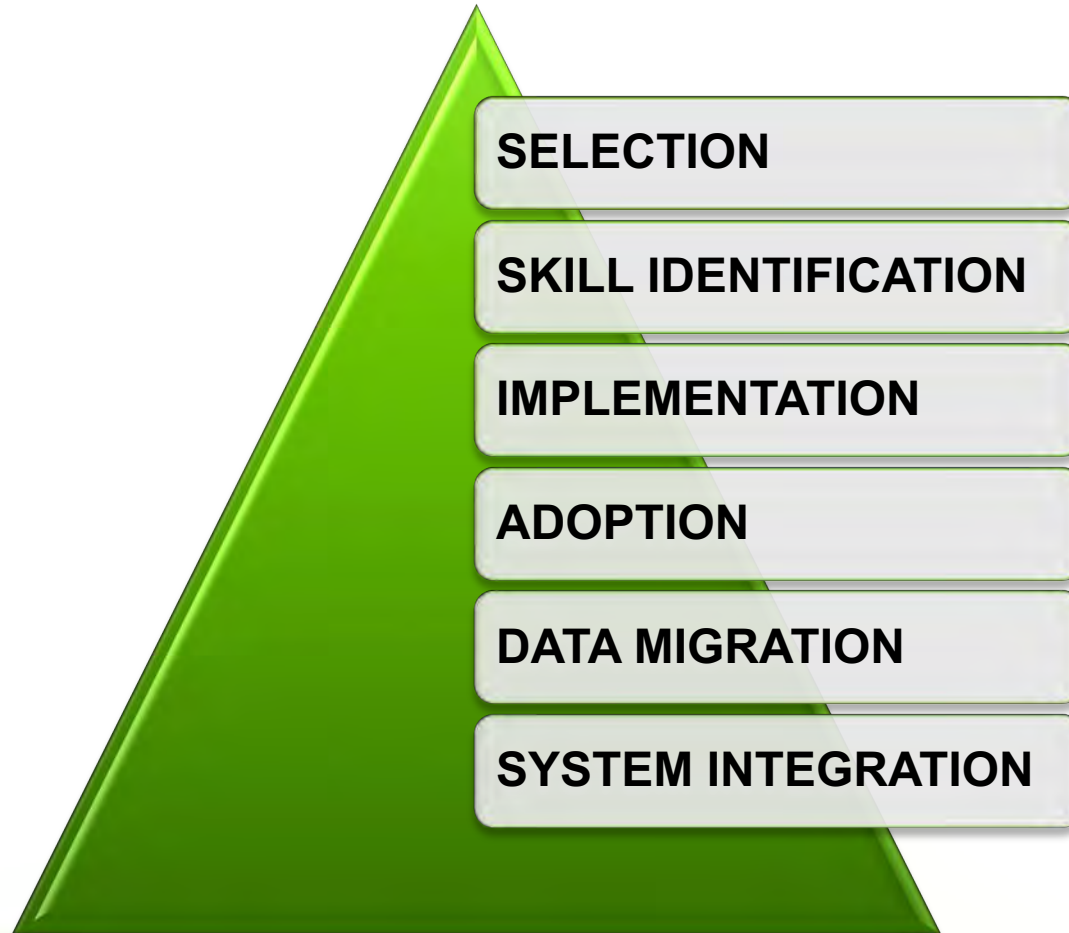
UNIFICATION

- ▶ All above mentioned systems are Integratable (HL7 Standard)
 - ▶ However, systems from different vendors may require some programming
 - ▶ While horizontal integration is desired (amongst MC's), vertical integration is as equally needed (amongst regional health facilities)
 - ▶ Either one of these vendors is/will be capable of providing KPI and analytics to be shared and reused at MOH level
 - ▶ Could leverage purchasing power by having a unified requirements and expectations amongst (MC).
- 

**THE CHALLENGE
IS HUGE**



THE CHALLENGE IS HUGE



THE CHALLENGE IS HUGE





Thank You