

Enterprise System Design for Reliable Performance in The Cloud

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The hospitality industry is entering its 3rd iteration of

CLOUD

and just perhaps this time it will work as promised..

Hospitality is the “Poster Child” industry for Cloud:

Highly Distributed – many endpoints (hotels) with small individual purchasing power

Few if any IT skills at hotels

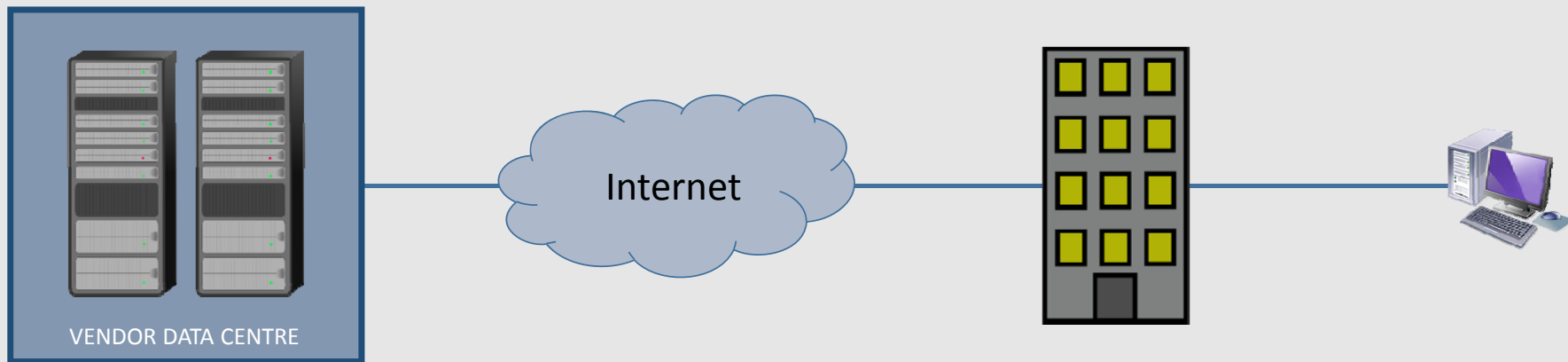
Need for consistent information across organisation

- Rates
- Availability
- Reservation
- Customer

Distributed Security is a problem

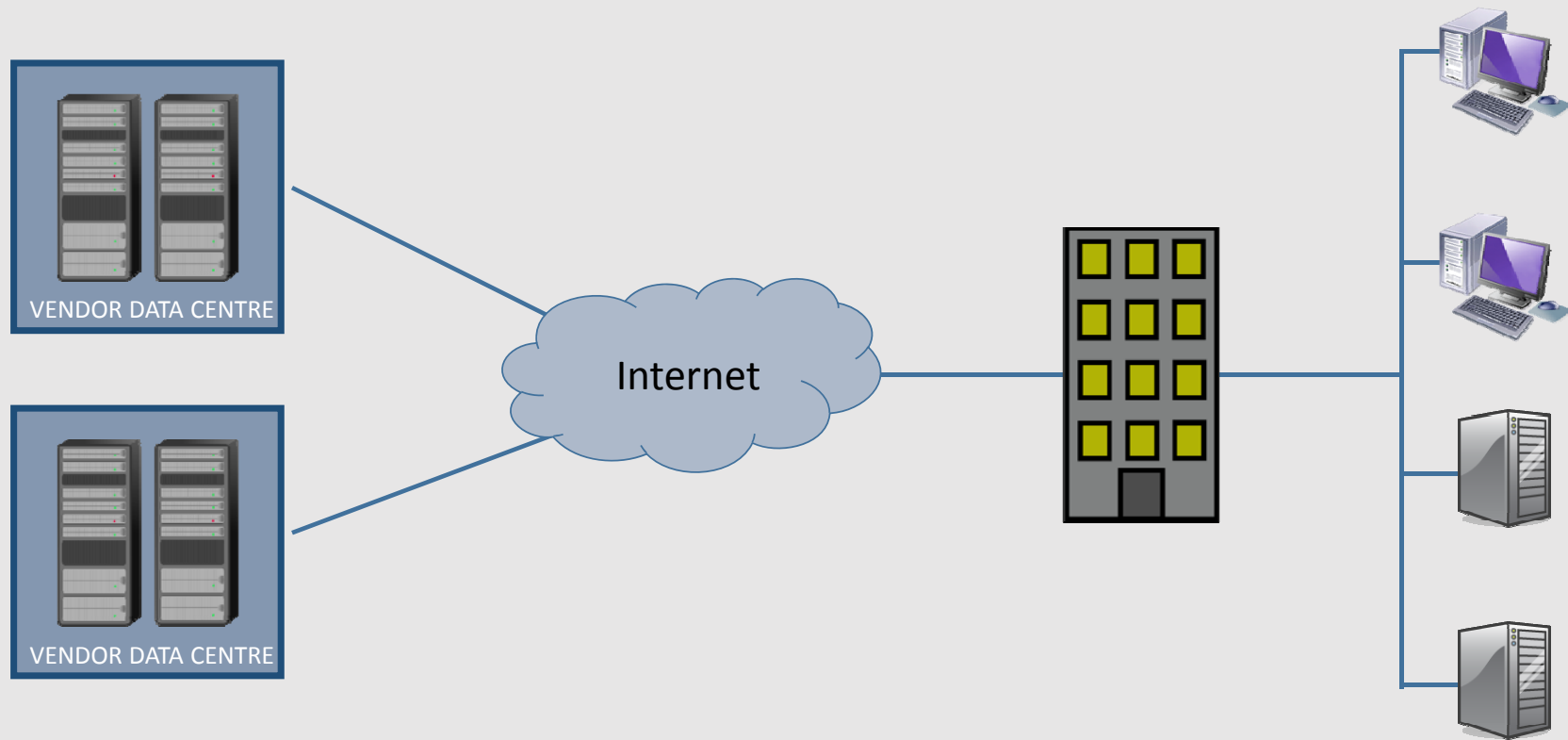
- Reduce the attack surface by minimising number of systems in the field
- Improve user identity management
- Tighten up firewall rules

Generation 1: Data Centre Hosted / Remote Terminal Access



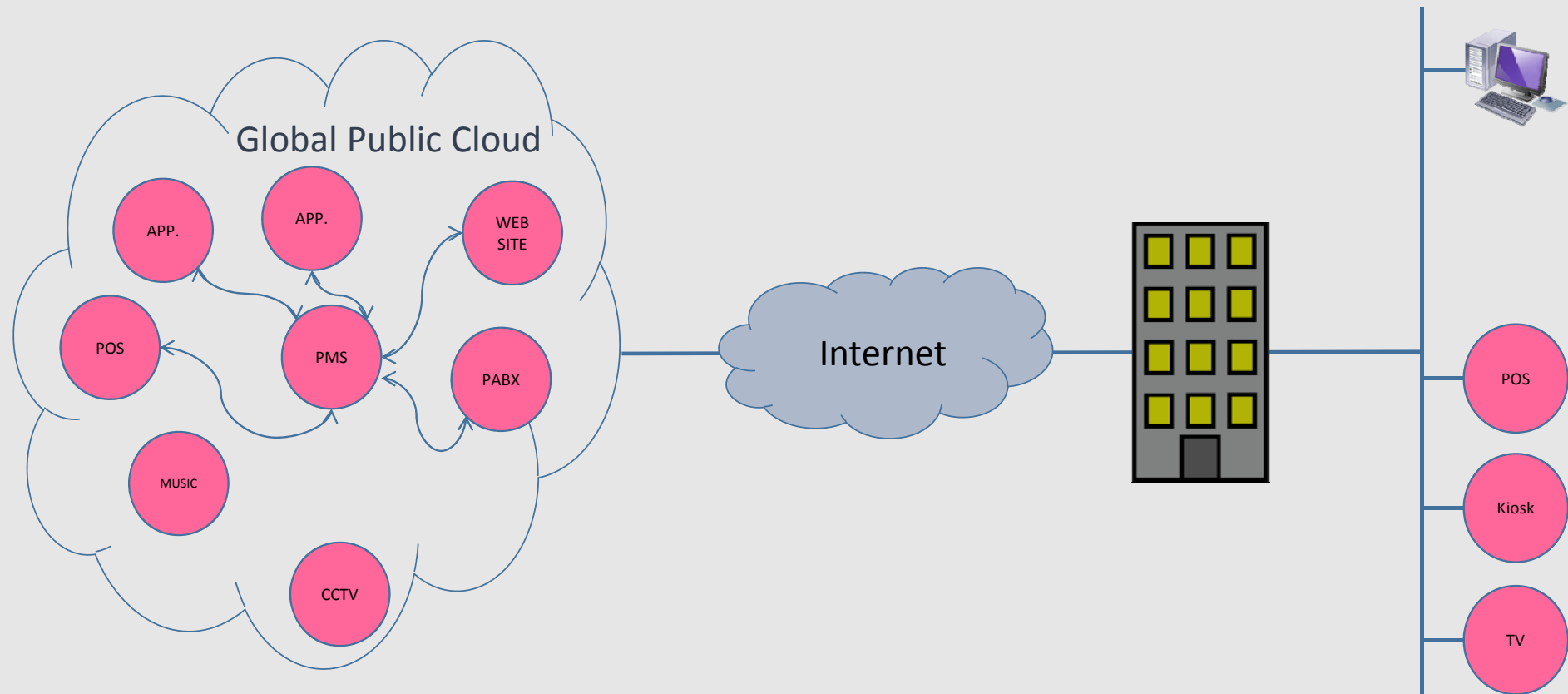
THIS IS NOT CLOUD

Generation 2: The Drift Towards Cloud



Generation 3: Enterprise Cloud

Primary Business Workflows hosted in the cloud



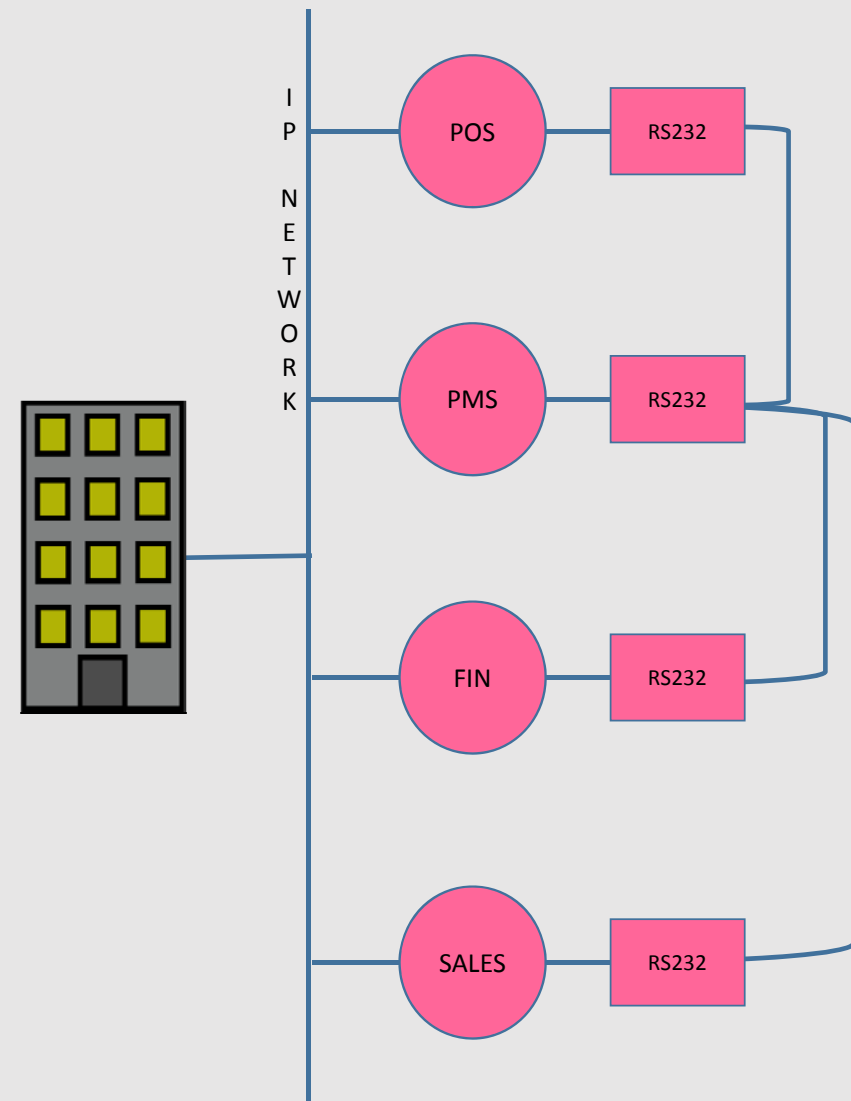
Hotel interfaces Year 2000

Incredible but true:

*IP connected servers communicate via
interface PC's connected via RS232*

This was the mess that HTNG was in-part created
to address

So how have we done?



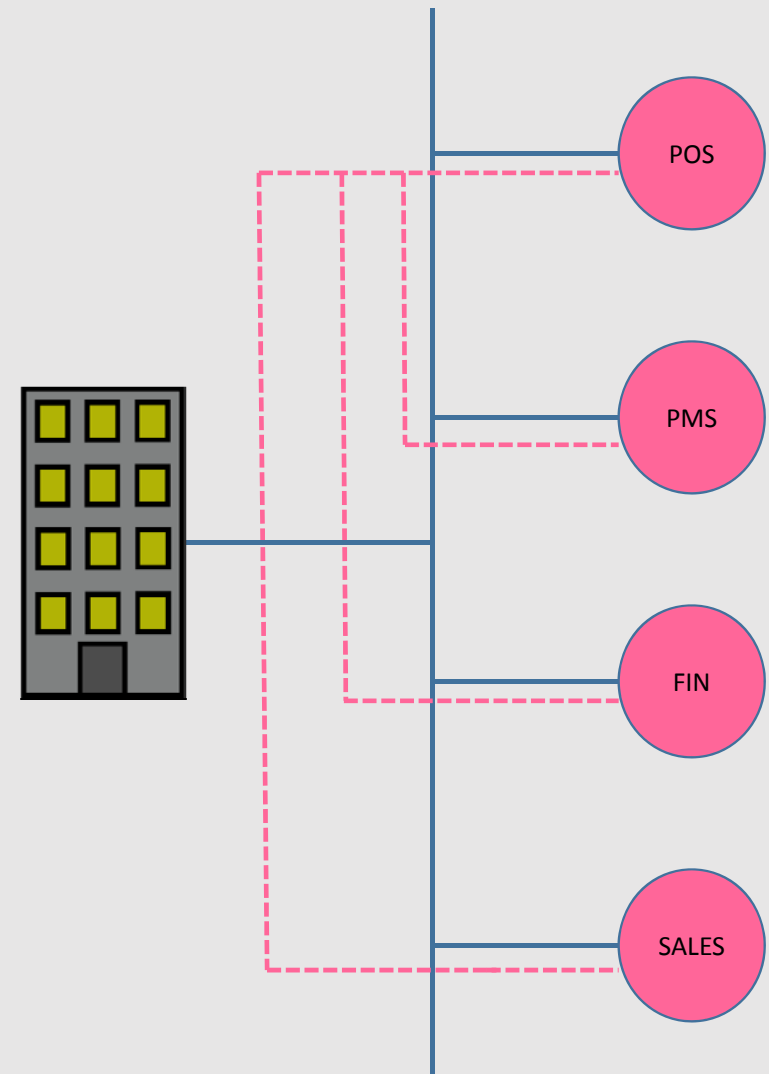
Hotel interfaces Year 2005

RS232 cables mostly replaced by IP web services

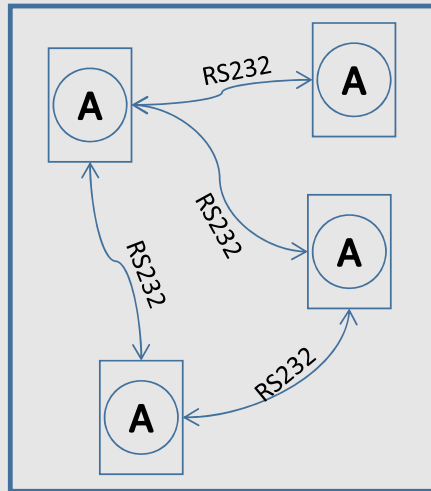
HTNG standards gaining industry acceptance

Interfaces designed with an “on-premise mindset”

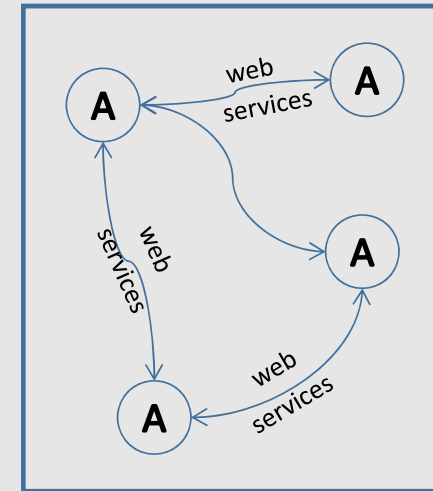
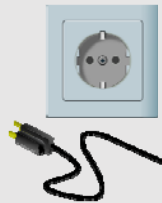
- Fast wire speeds ≥ 100 Mb/s
- Systems easily accessible for quick reboot
- Systems & interfaces operate at the hotel level so reboot only takes down single hotel
- IT managers in control



..but interfaces are still a problem



Management model:

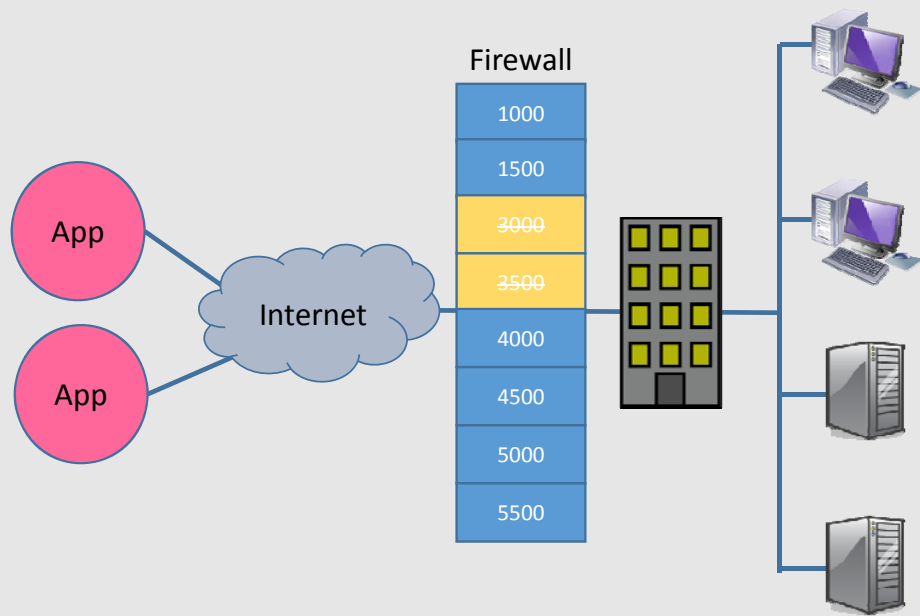


Management model:

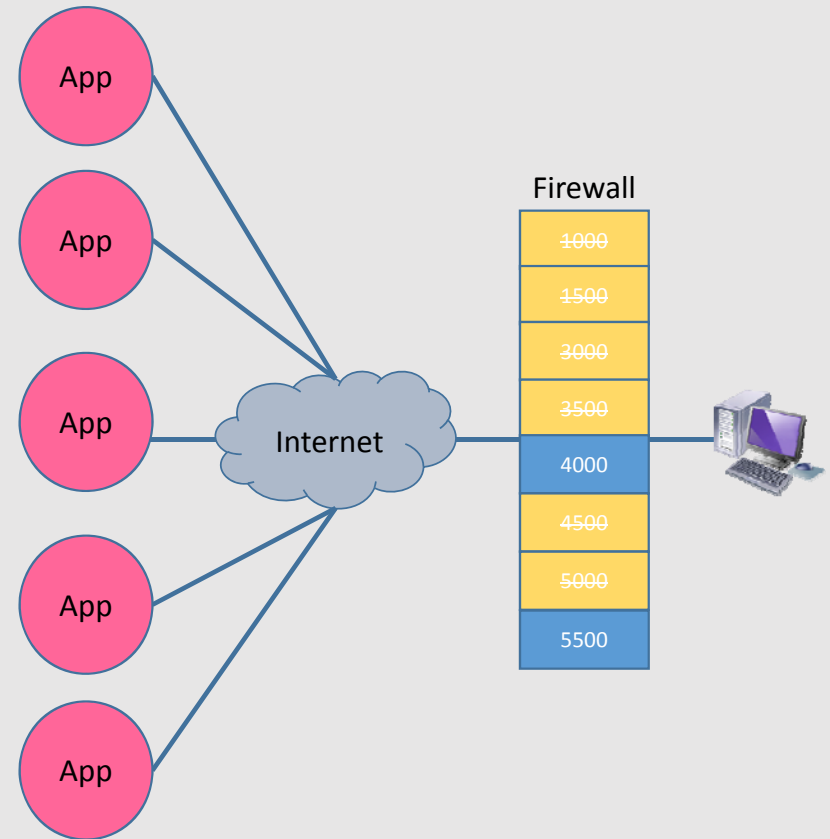


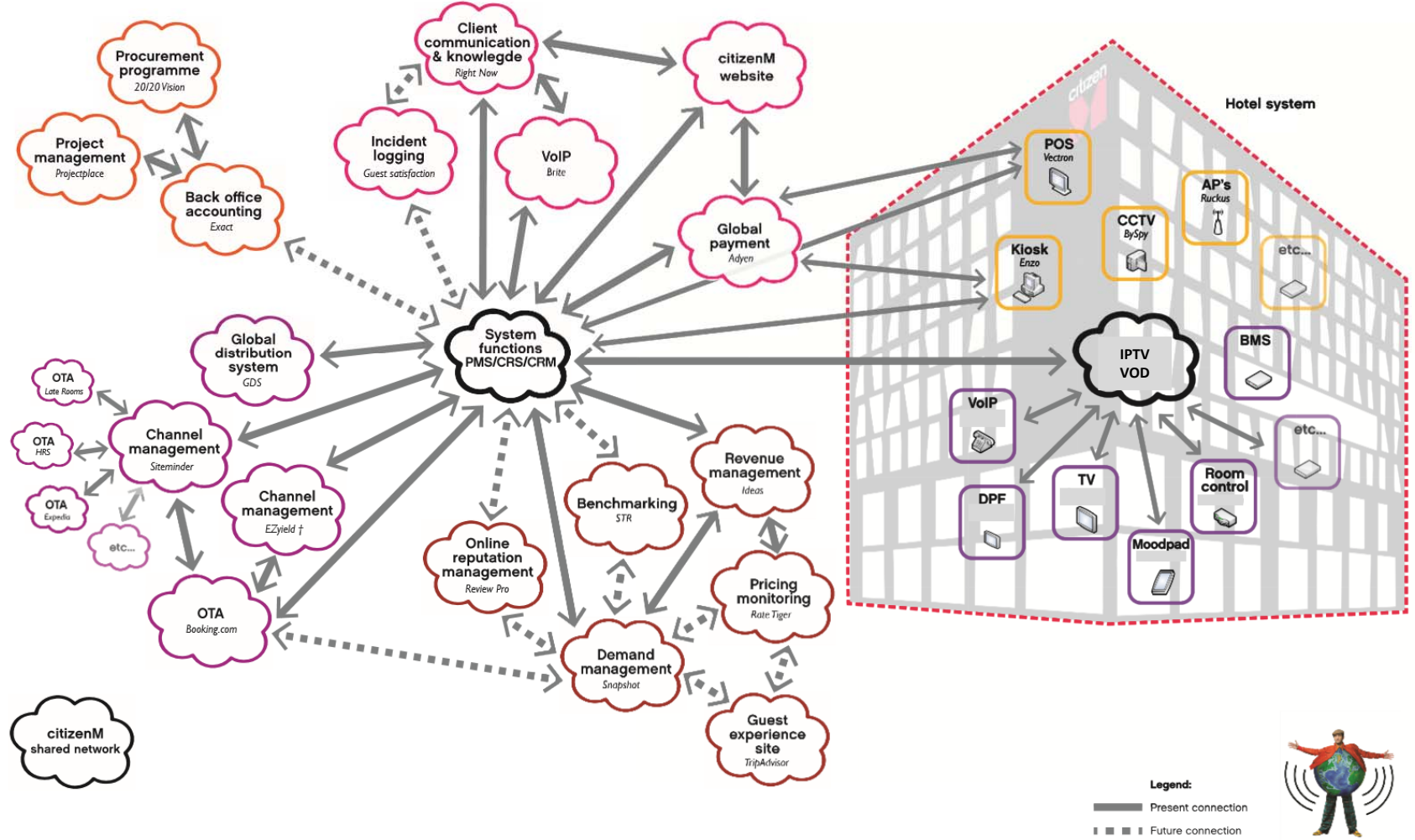
Kiosk -> PMS -> Payment -> PMS -> Room Systems -> PMS

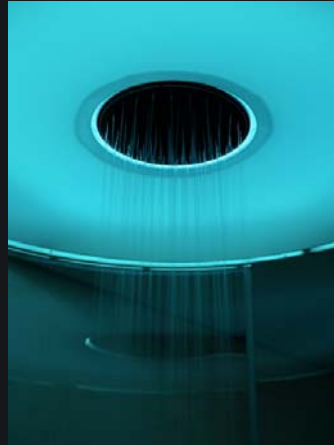
Year 2008



Year 2014







the room



the room

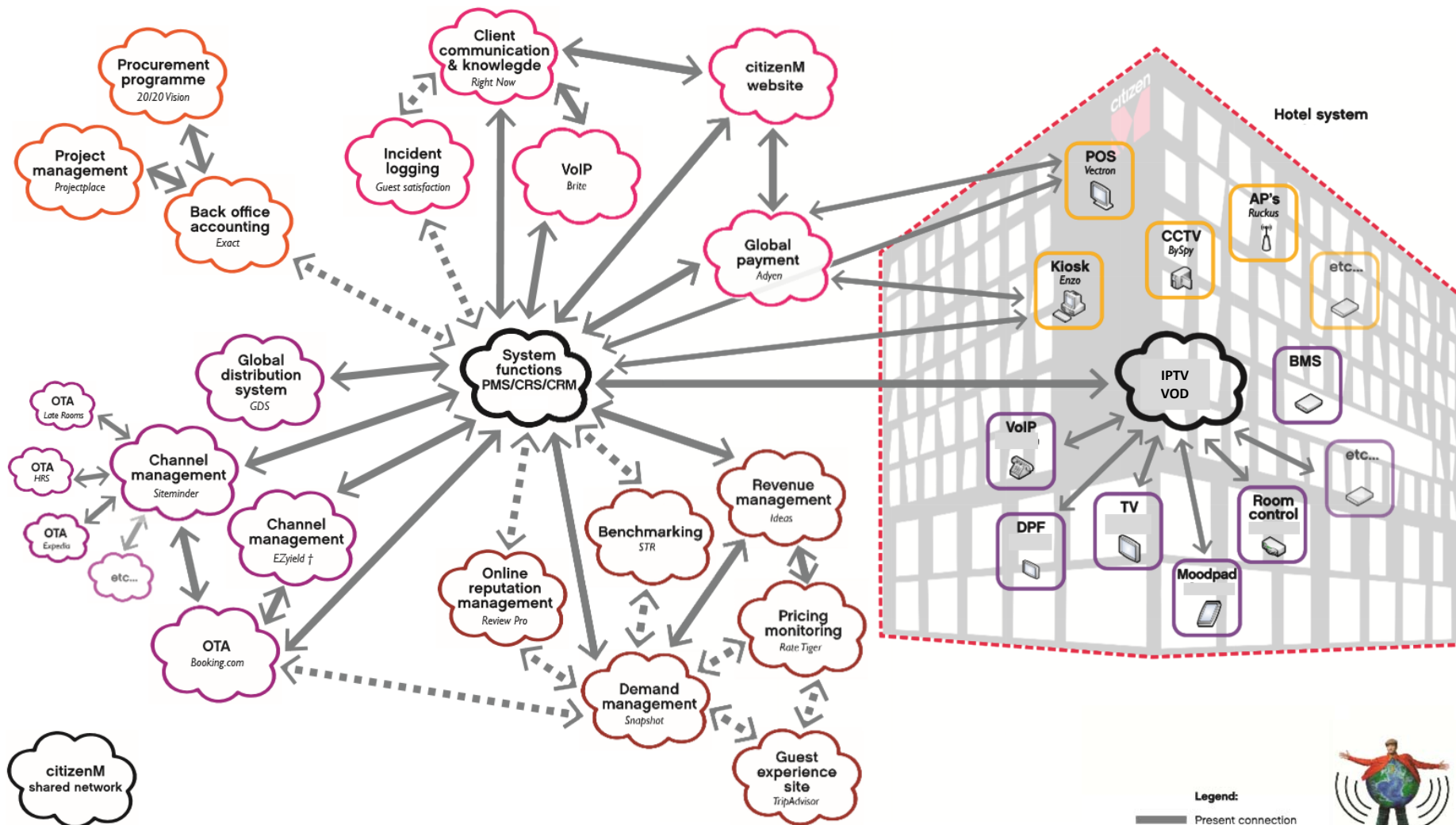


mood pad



Kiosk





cM Current Architecture

Legend:
 — Present connection
 - - - Future connection



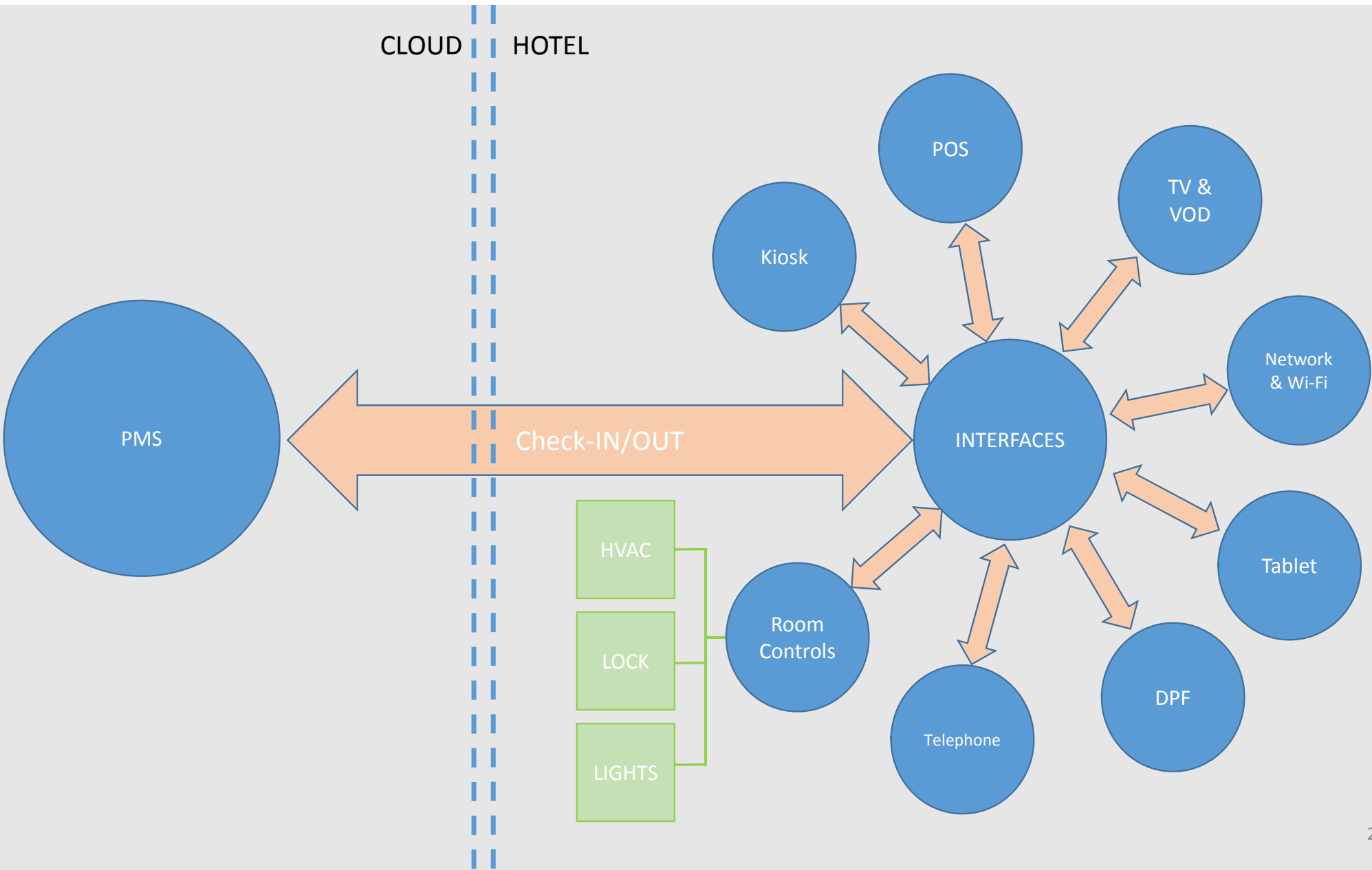


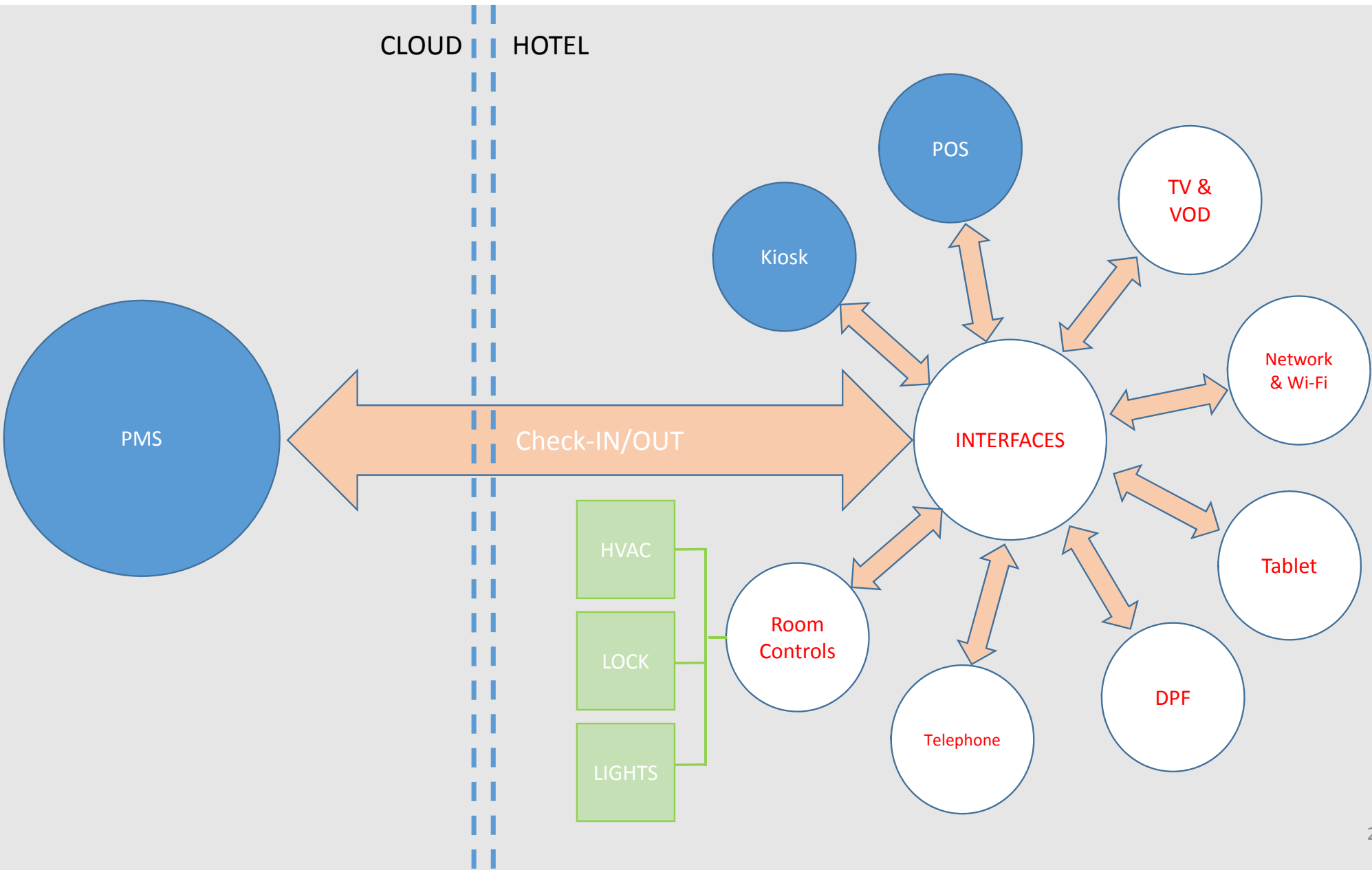
- Unreliable?
- Slow?
- Broken?
- Insecure?
- Not scalable as cM grows in size and expands globally

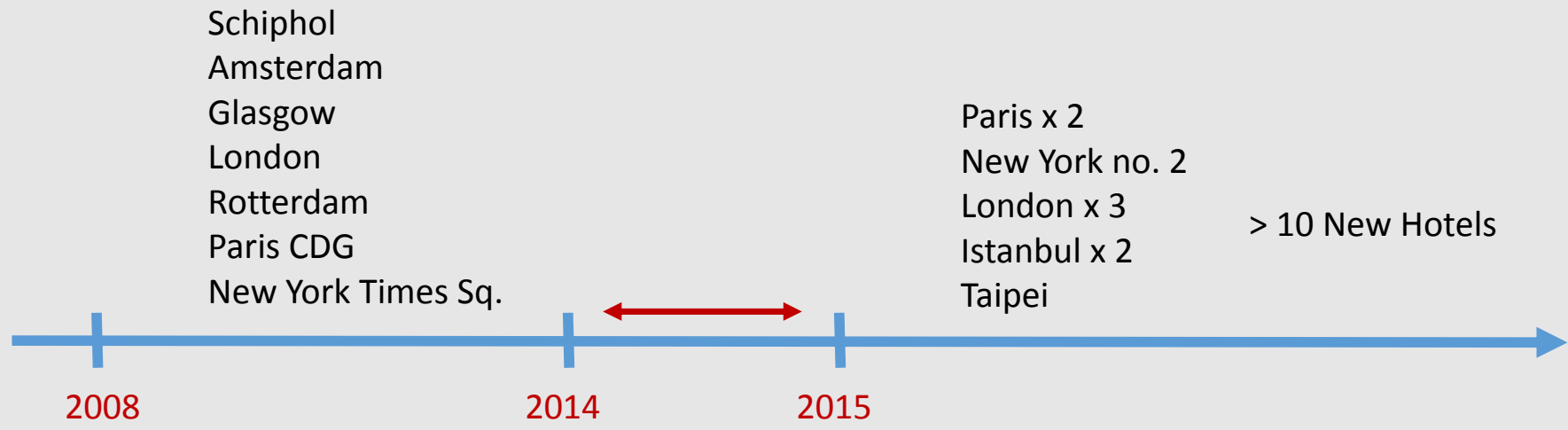
WHY?



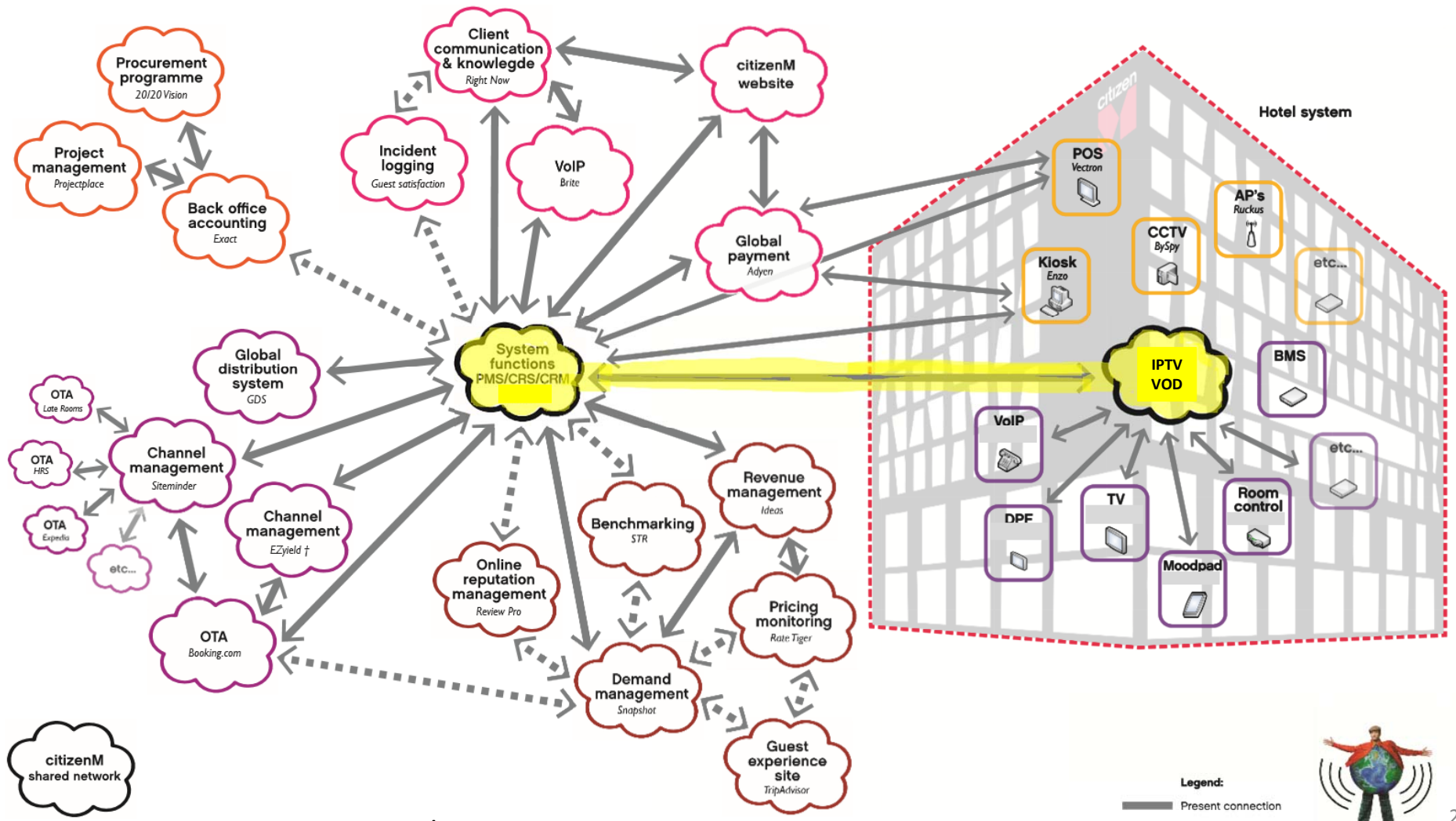
- Many point to point interfaces:
 - that are unmanaged and poorly tested
 - where performance is governed by internet activity on any given day
 - that are written by different companies
 - who have different competencies
 - with little understanding of, or interest in, the bigger picture
- Interfaces are not transactional
- Overall security is as good as the least secure entry point
- No capability to orchestrate transactions across multiple systems
- No logical central point from which to manage
- Very difficult to change systems, especially PMS, without expensive and risky re-write of all the interfaces





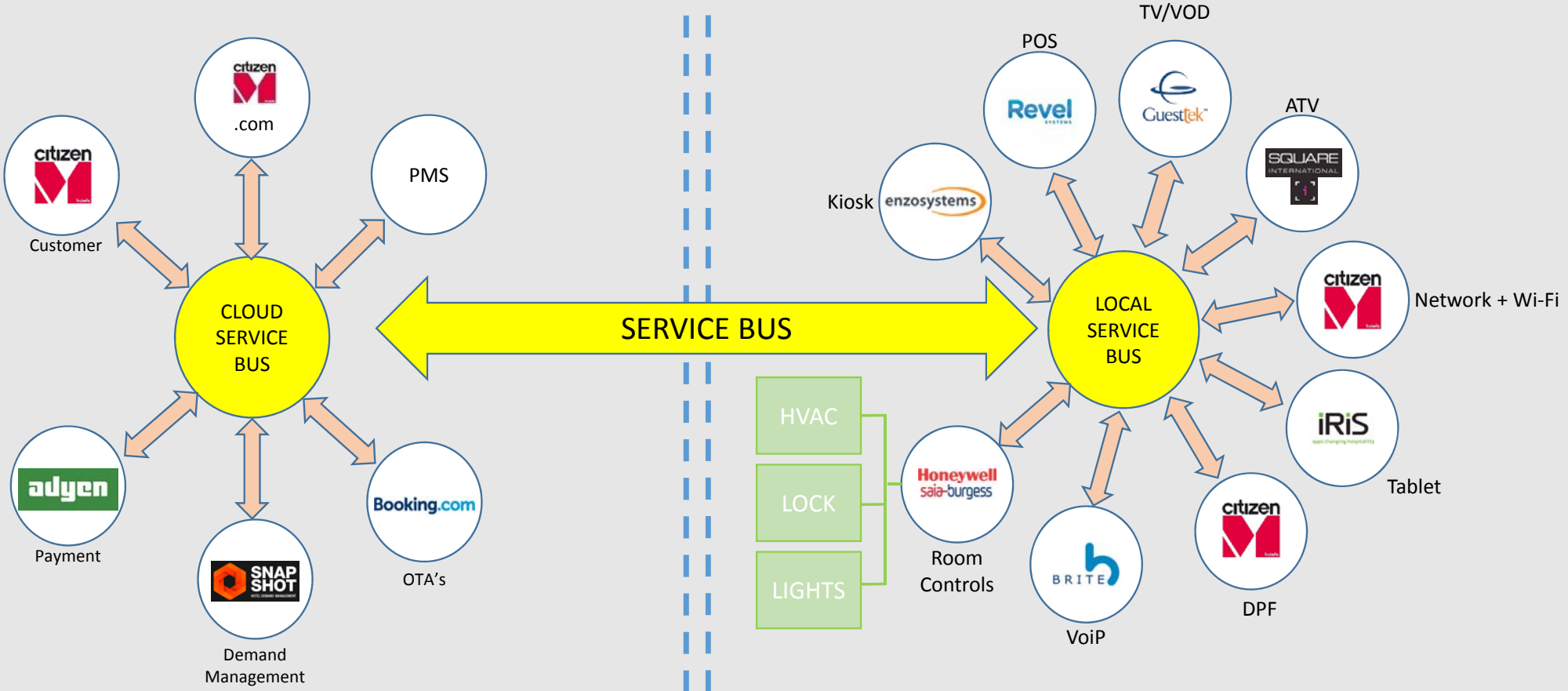


citizenM Hotel Opening Timeline

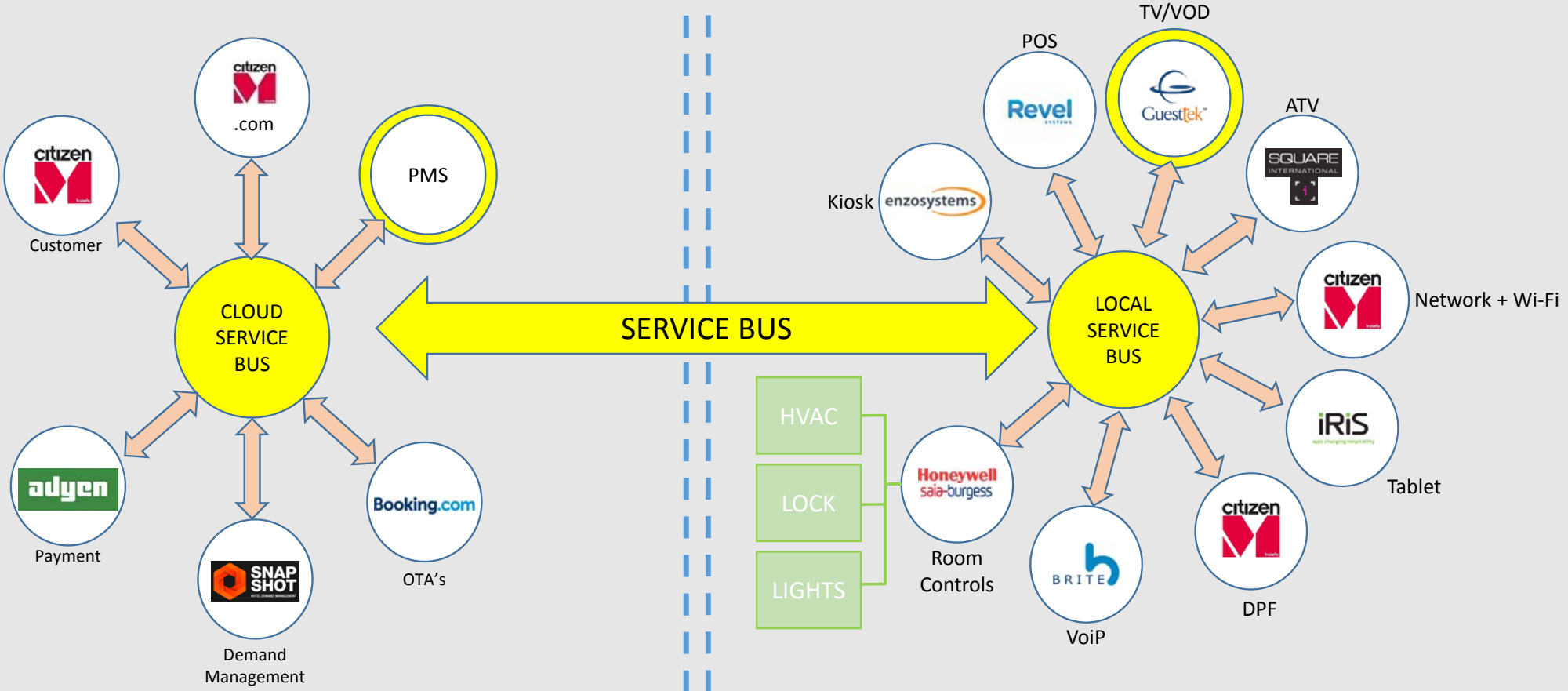


cM Current Architecture

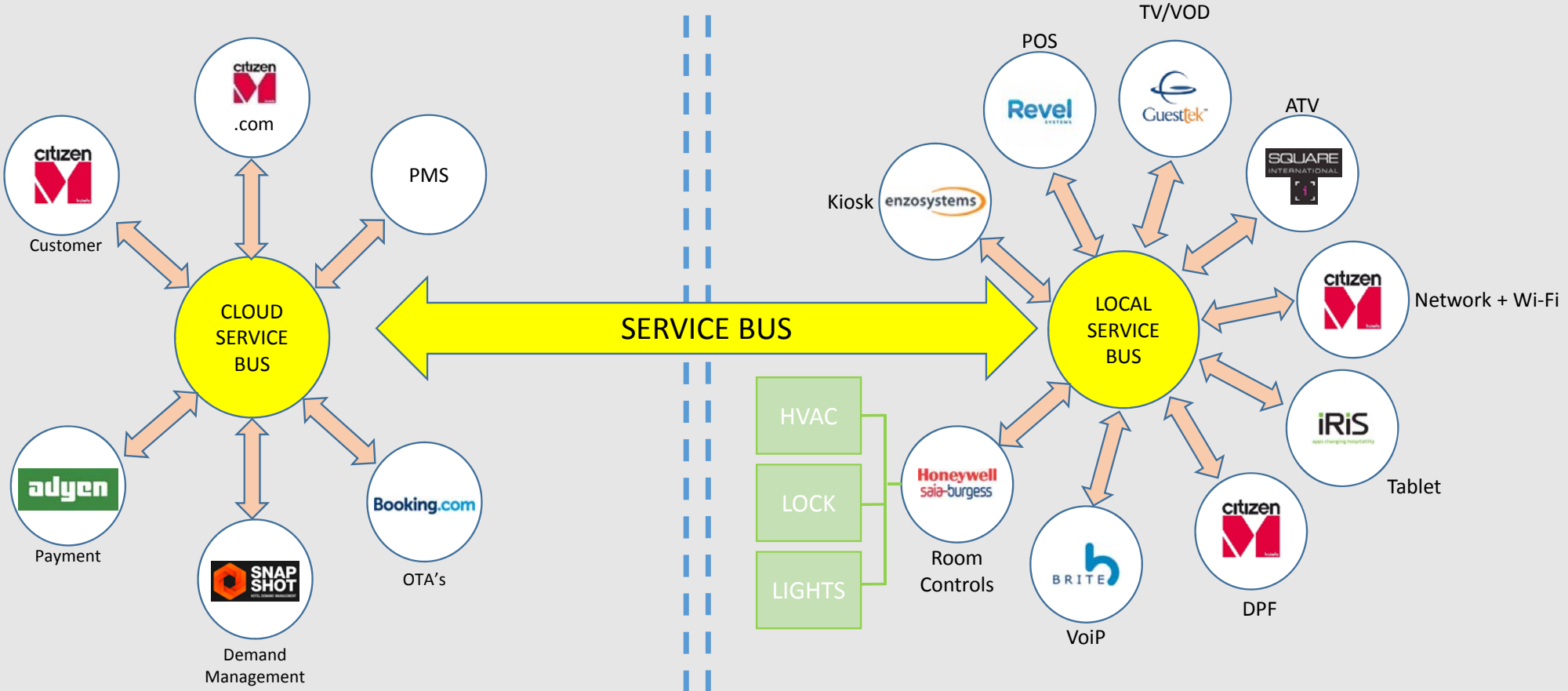
CLOUD HOTEL



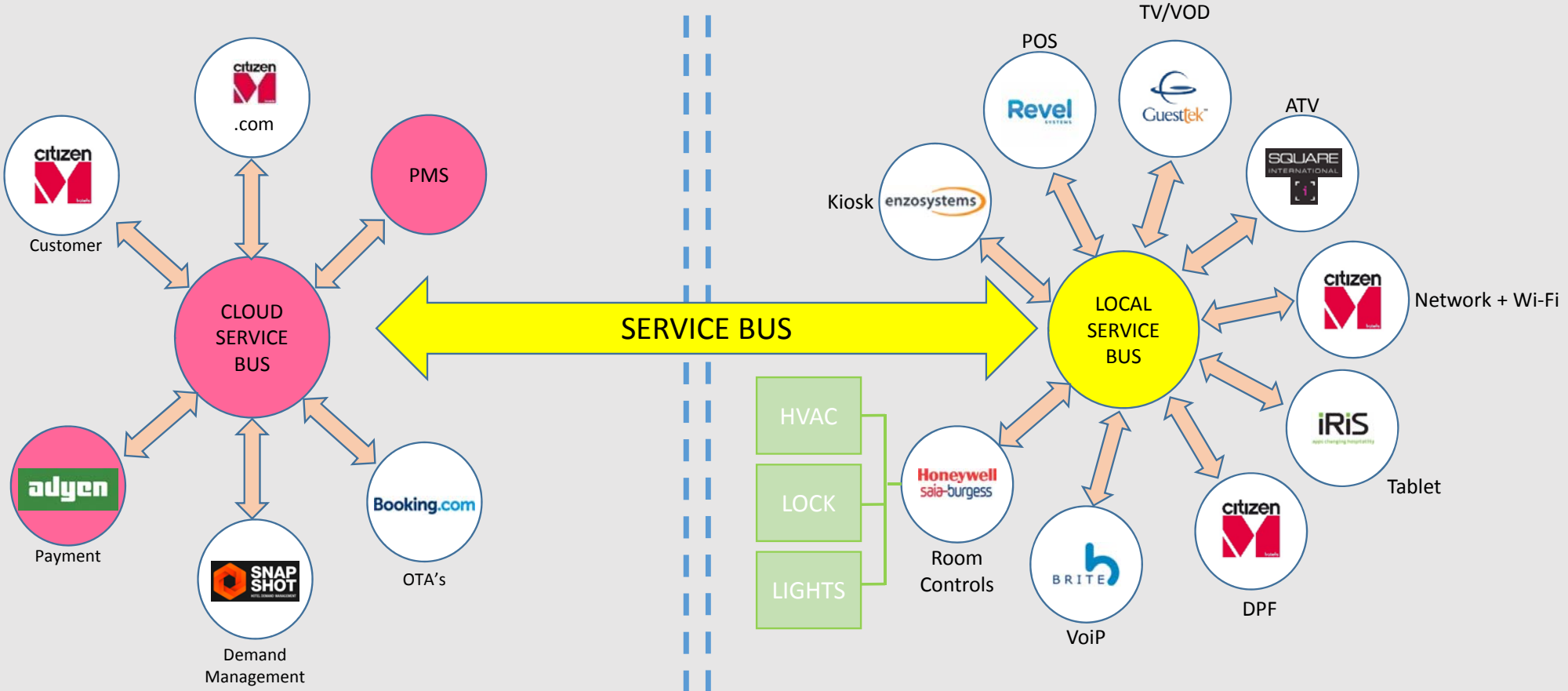
CLOUD HOTEL



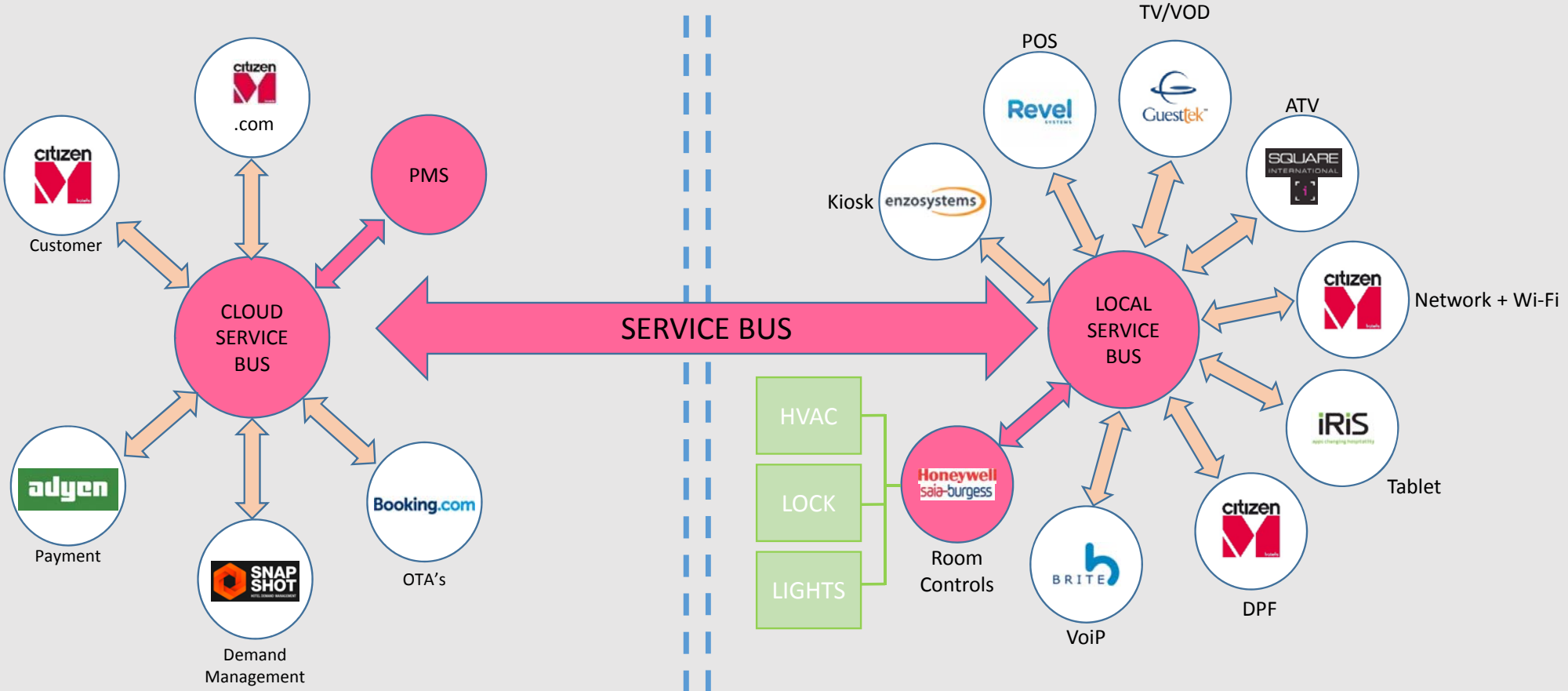
CLOUD HOTEL



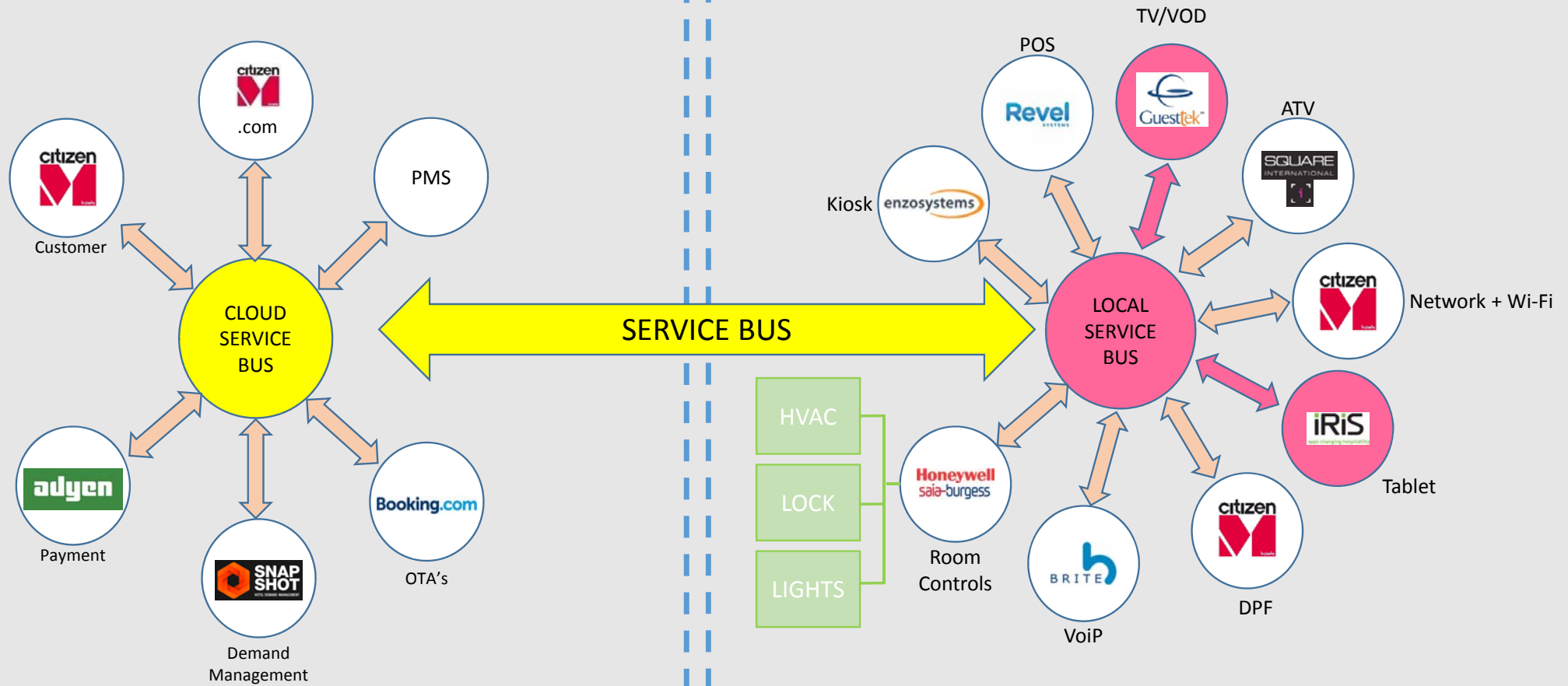
CLOUD APP TO CLOUD APP MESSAGING



CLOUD APP TO HOTEL APP MESSAGING

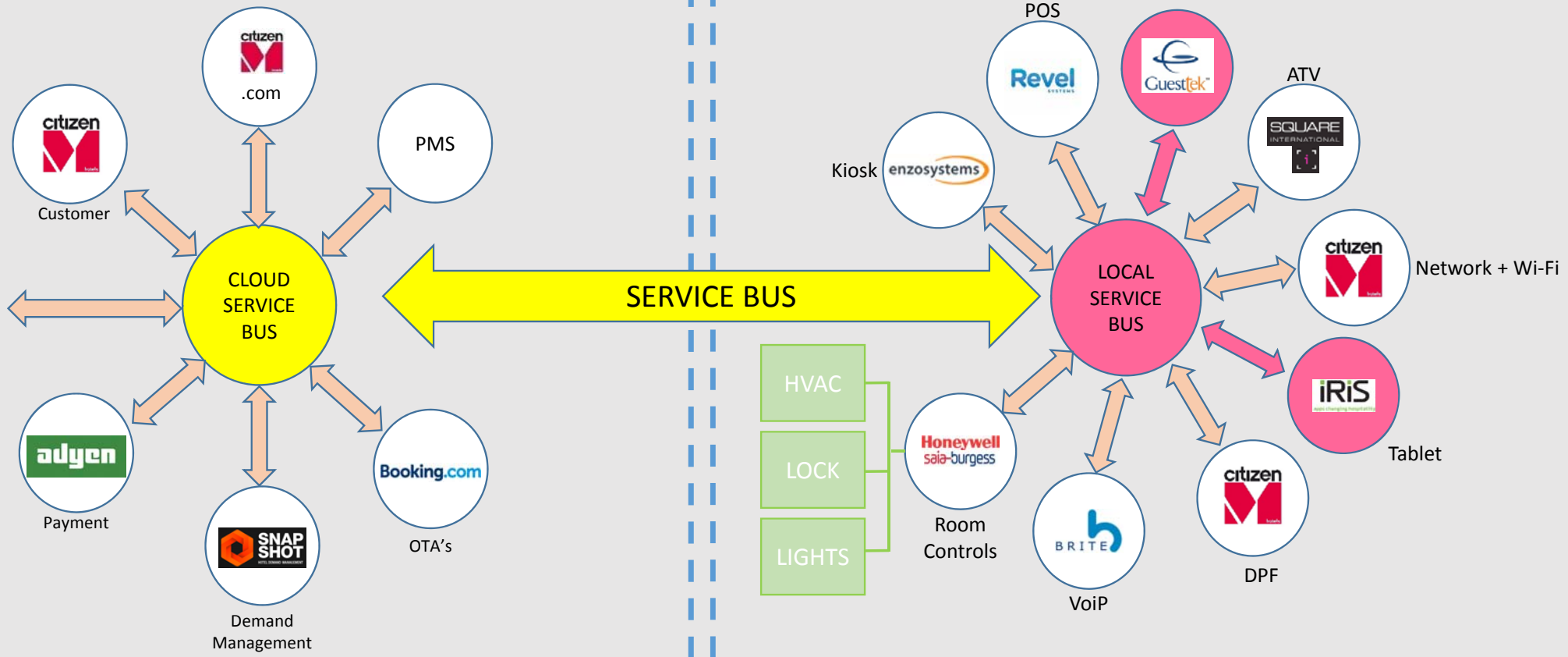


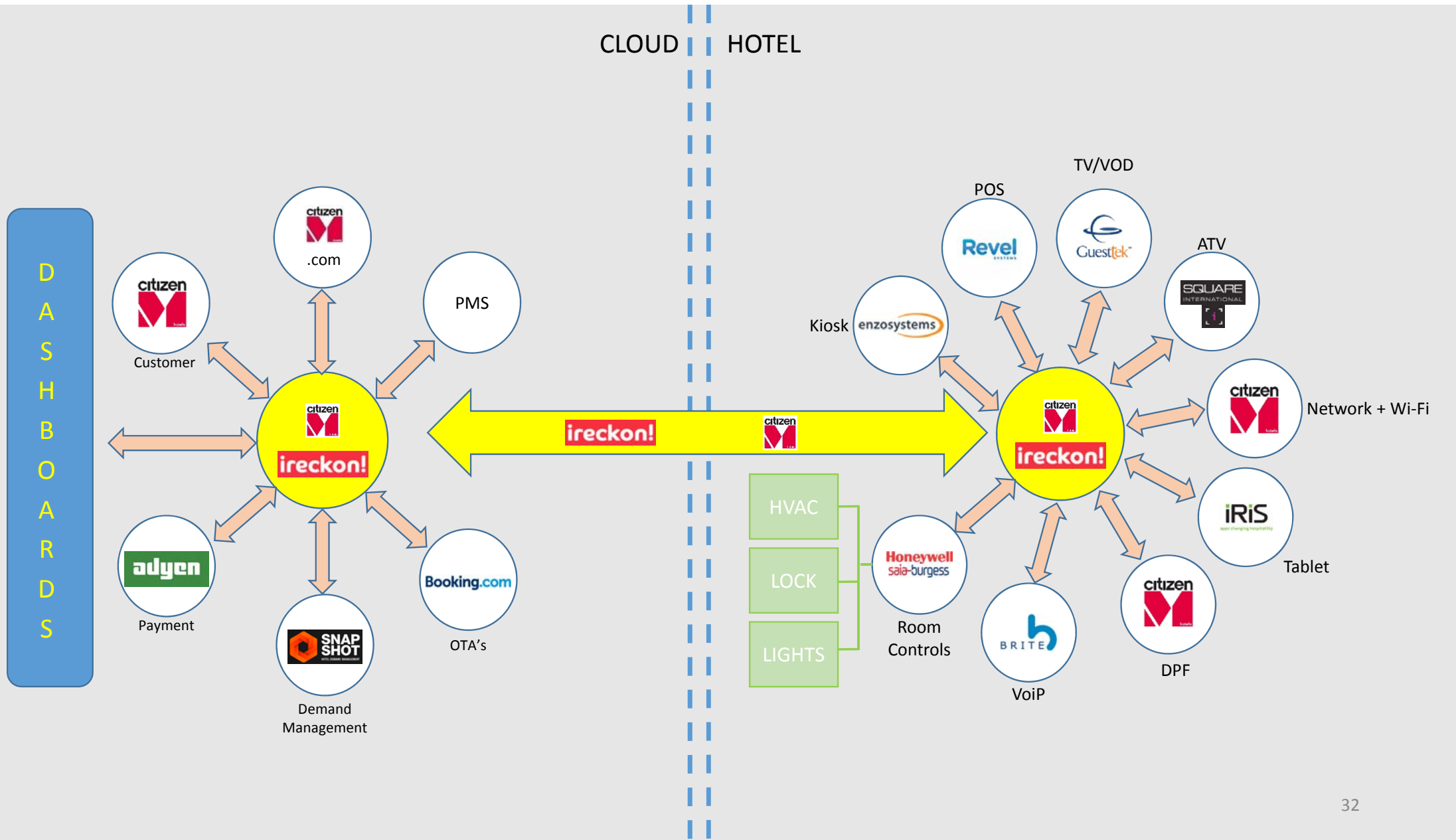
HOTEL APP TO HOTEL APP MESSAGING

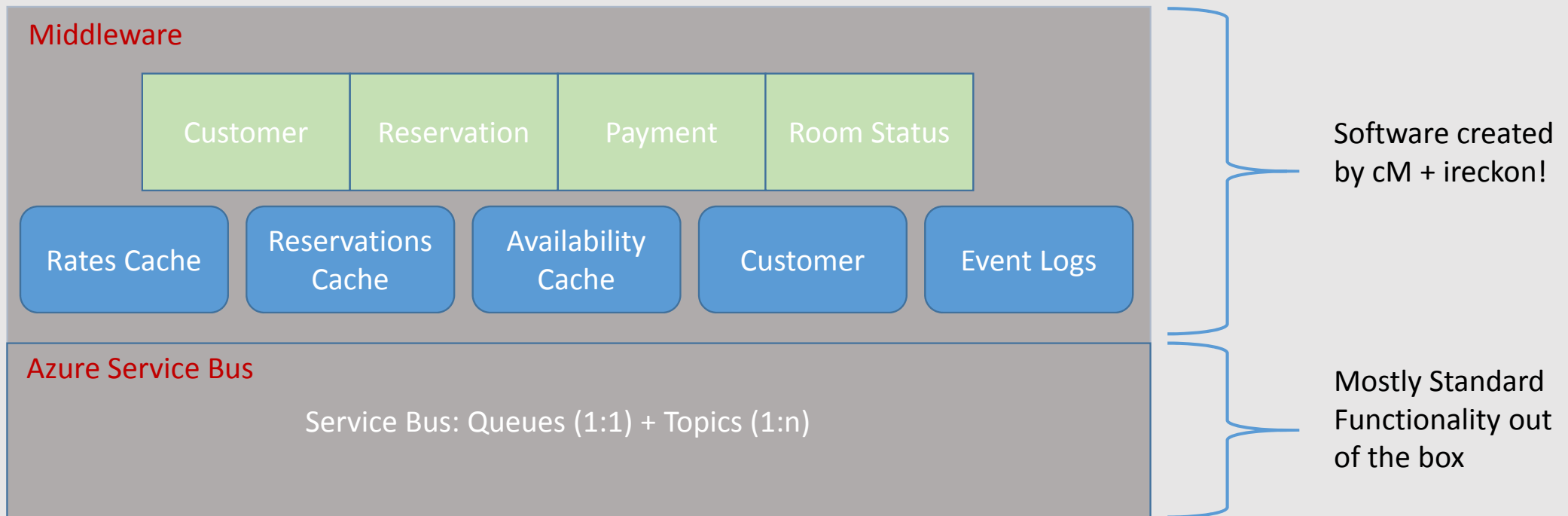


HOTEL APP TO HOTEL APP MESSAGING

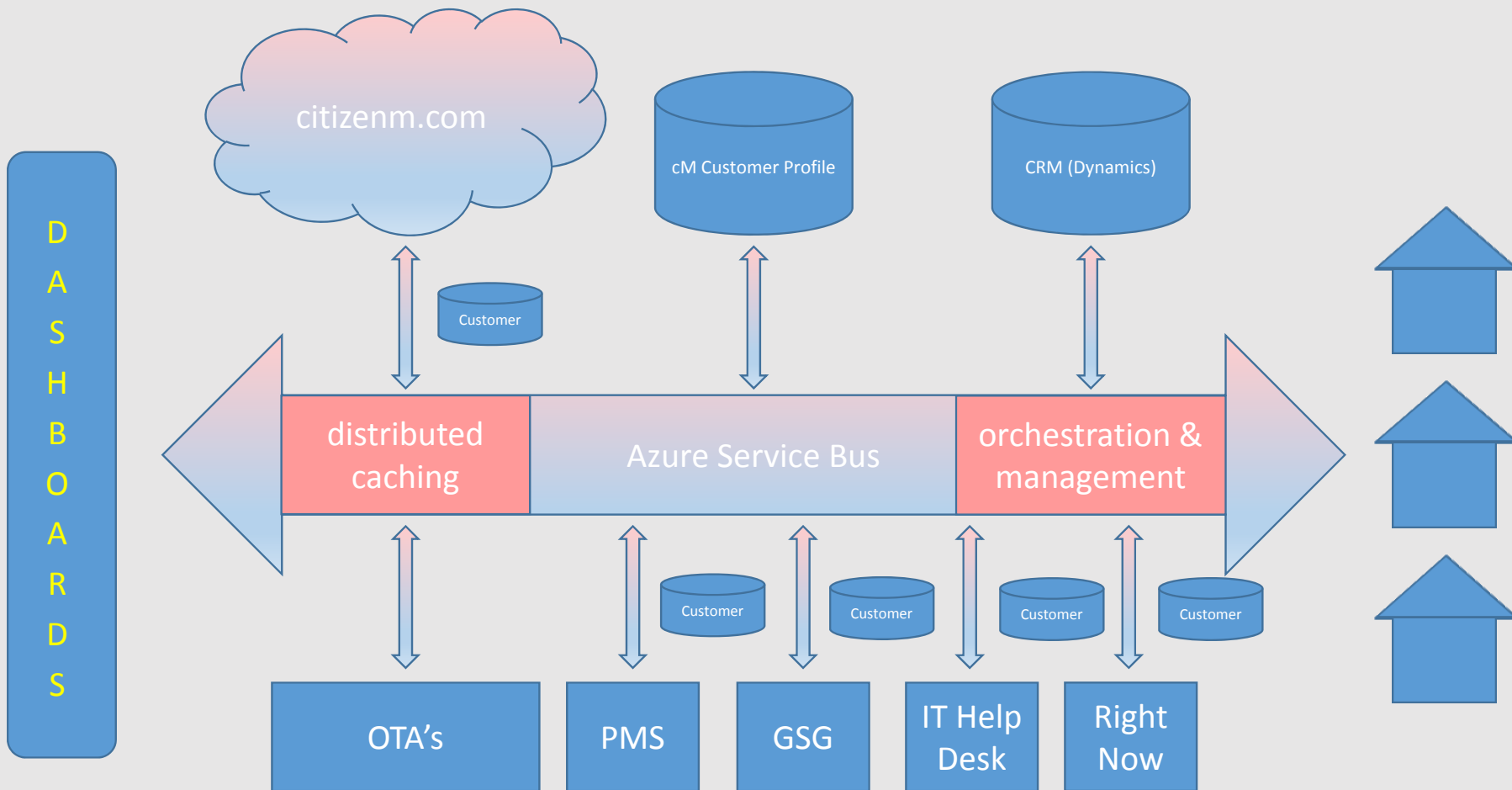
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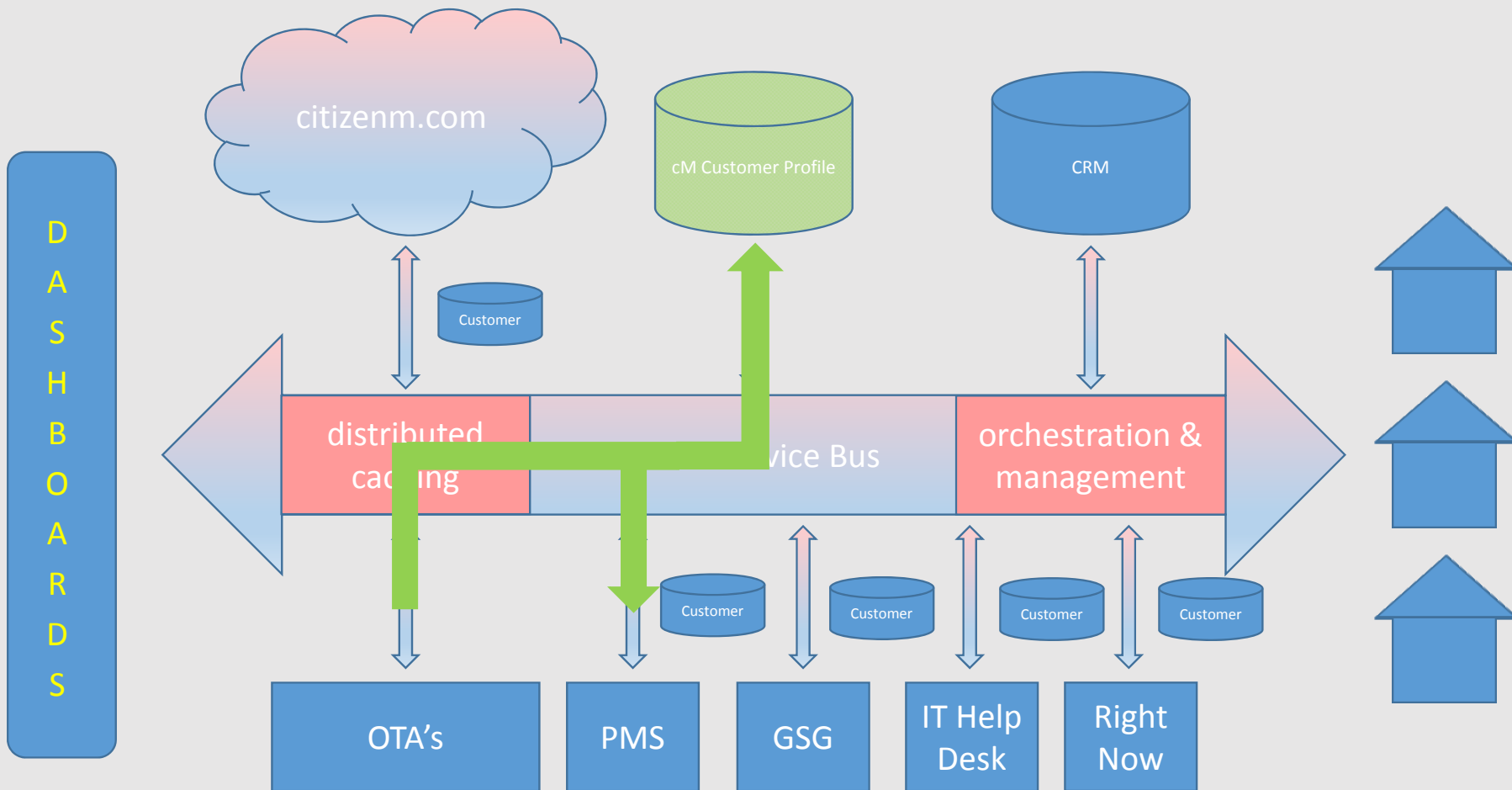




SERVICE BUS EXPLAINED (SIMPLISTIC VIEW)

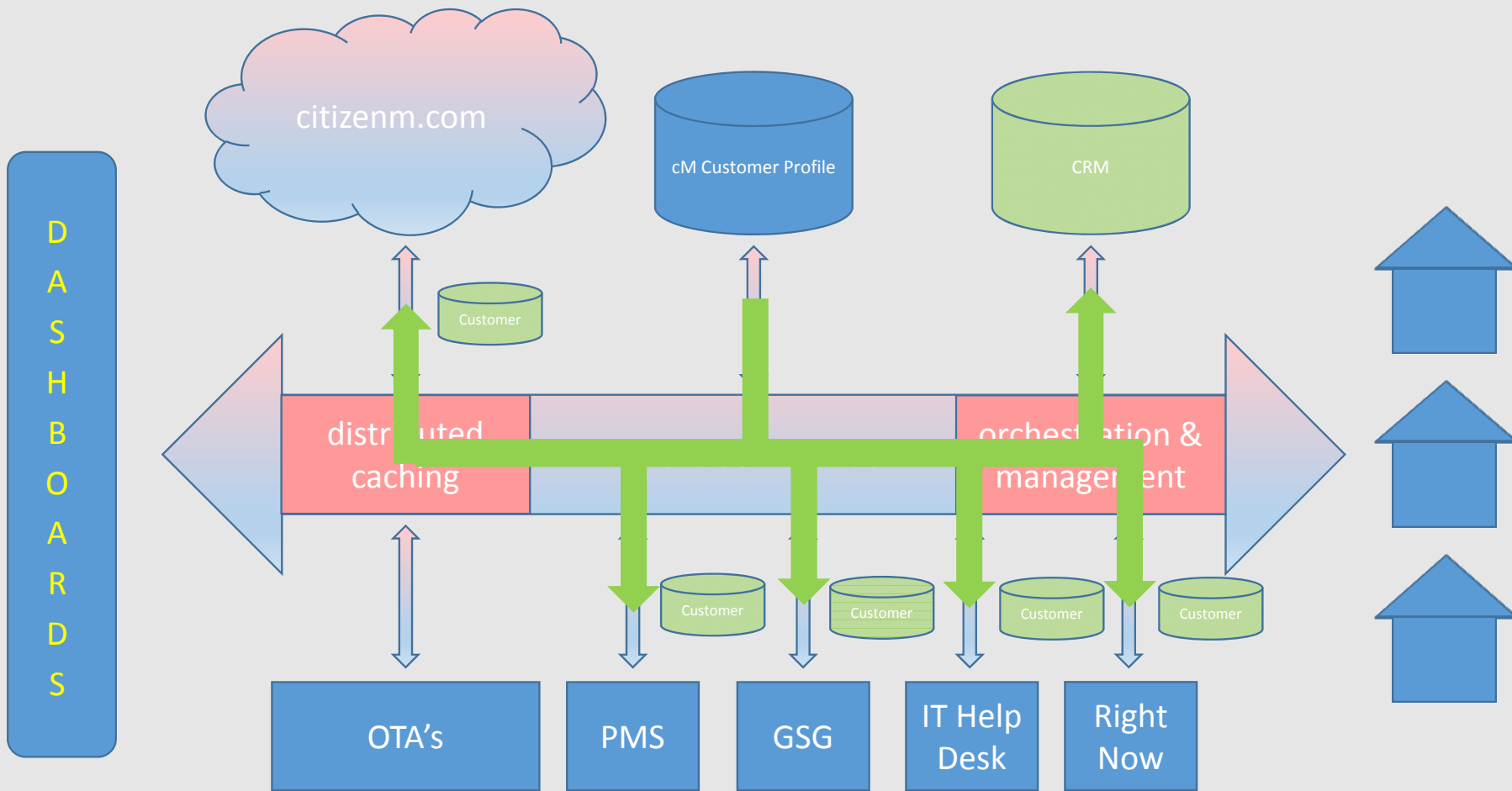


SERVICE BUS ARCHITECTURE



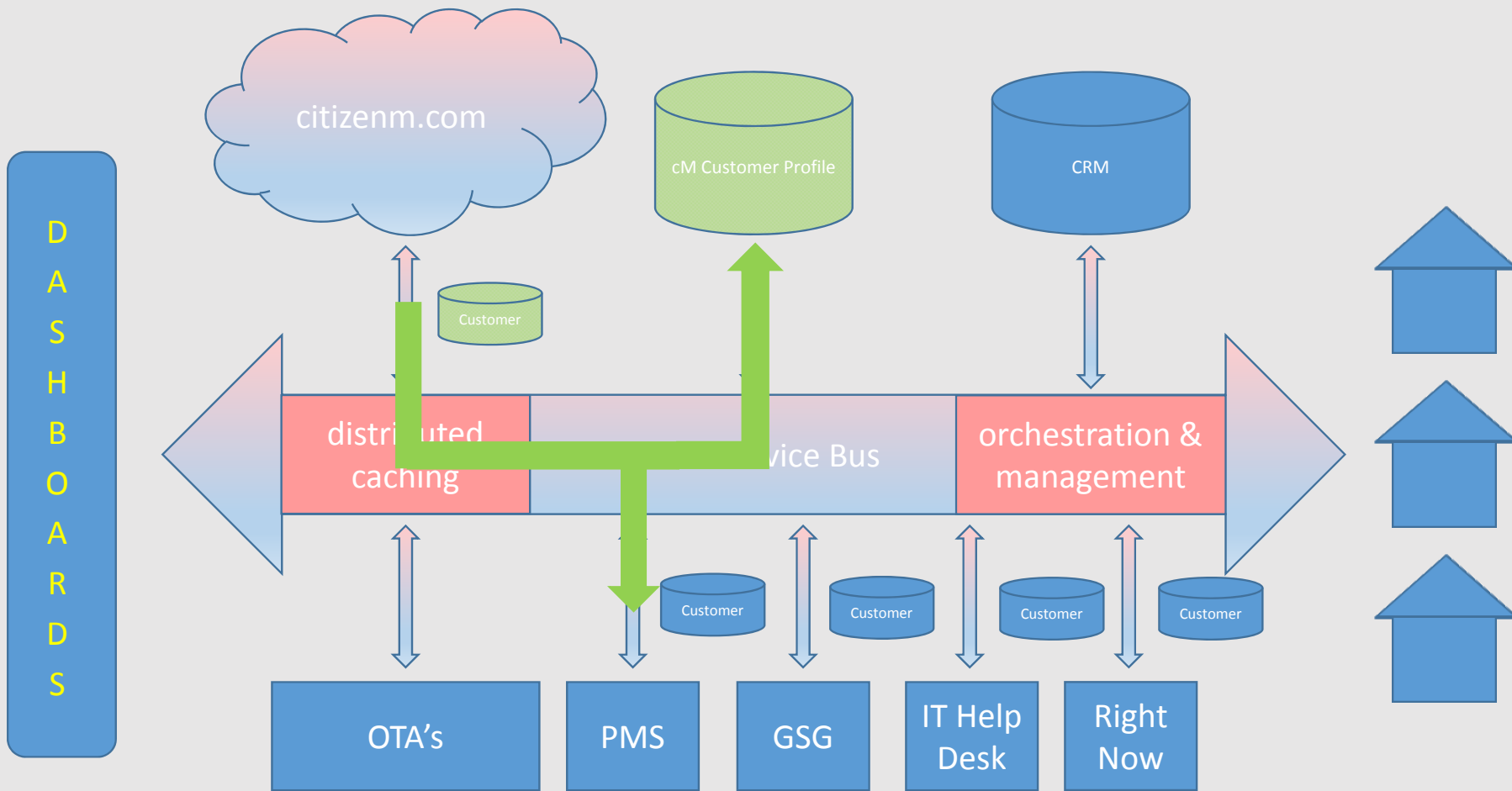
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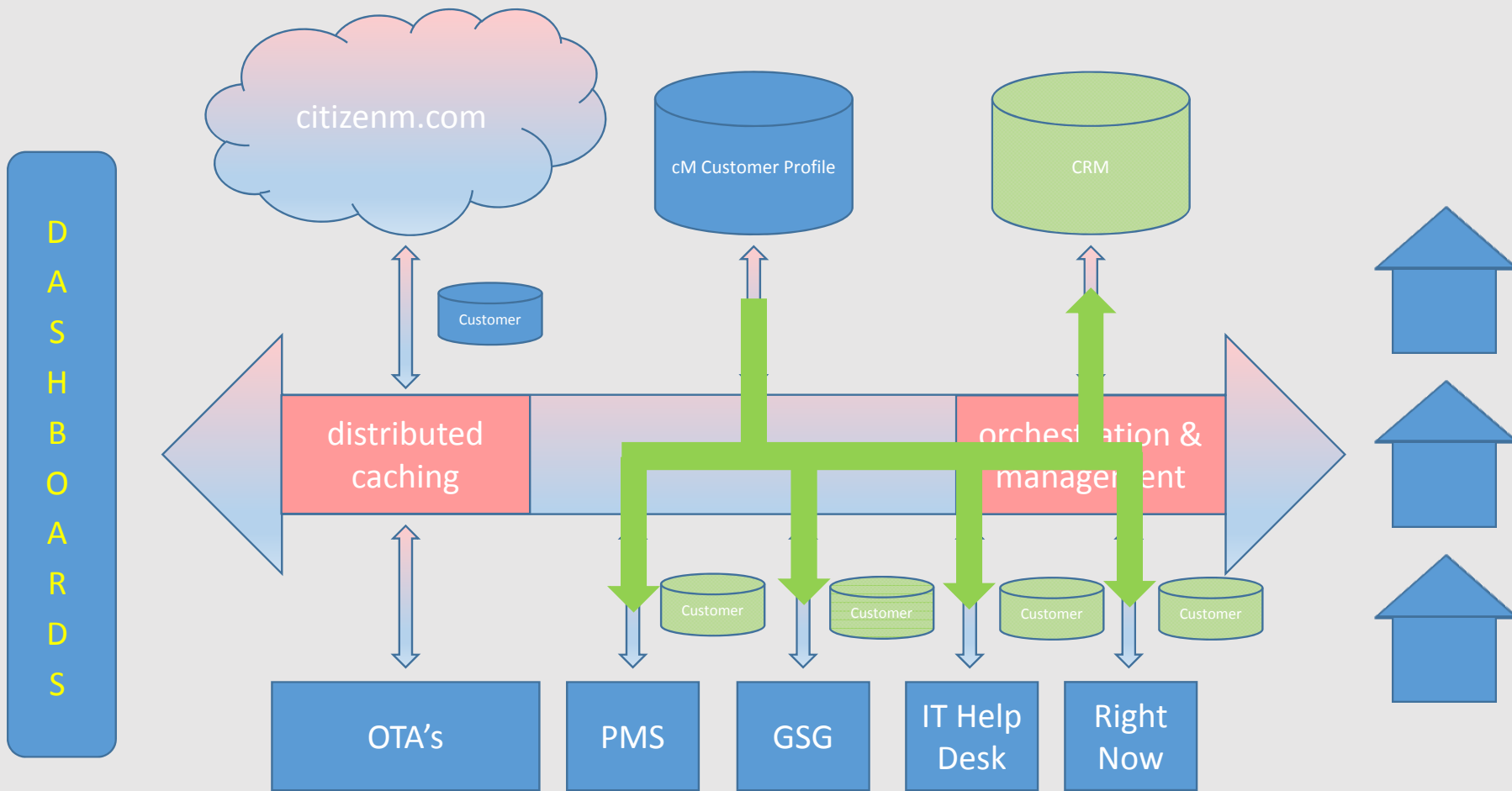
Booking via OTA



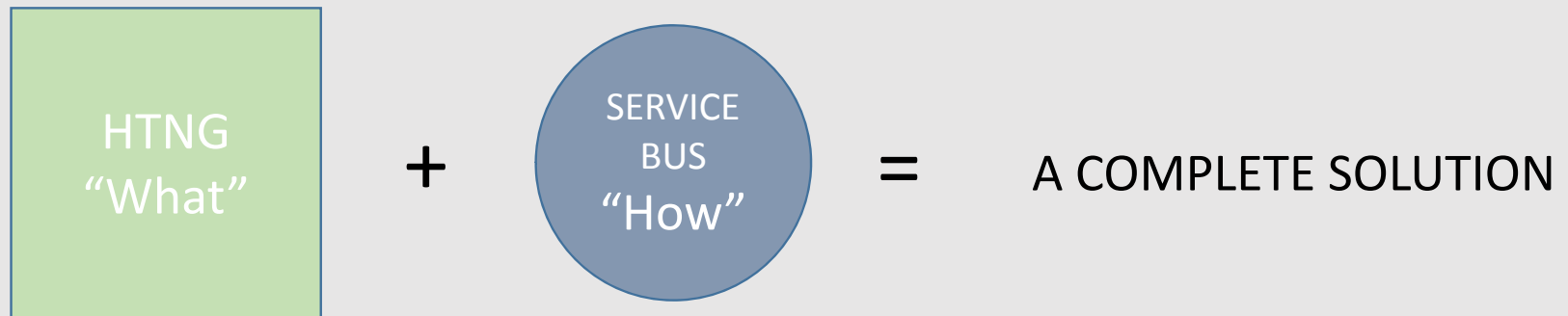
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Event driven update of LoB application customer DB's

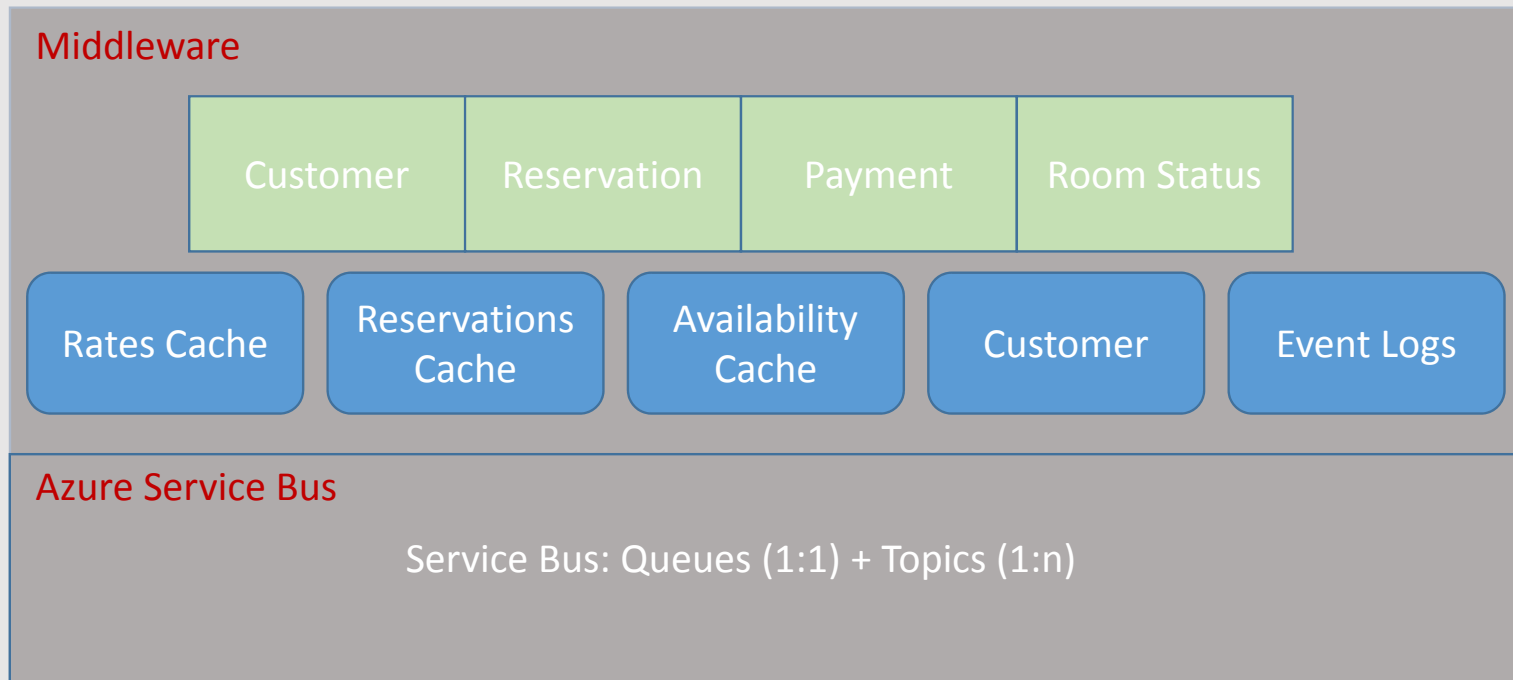




HTNG Standard	Compliance Status	% compliant	Why not fully compliant	Alternative
Back Office Integration				
Back Office Integration Travel Agent Commissions	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Customer Profile	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Device Messaging Structure				
Digital Signage				
Distributed Antenna Systems Reference				
Distribution Content Management				
Distribution / Availability	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Distribution / Groups				
Distribution / Inventory	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Distribution / Rates	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Distribution / Reservations	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Distribution / Seamless Shop/Book	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Distribution / Statistics				
Event Notification				
Folio Detail Exchange				
Food & Beverage Ordering				
Guest & Room Status Messaging				
Guest Self Service				
Hospitality Profile for HDMI CEC v1.3				
Hosted Payment Capture Systems	Partial	Internal data structure	lacking security / xml data overhead	Web api /JSON
Intelligent Auxiliary Panel				
Intelligent Guest Room				
IP Set Top Box				
IP Voice Requirements				
Kiosk Integration				
Open Data Exchange				
Payment Processing				
Point of Sale				
Secure Data Proxy				
Single Guest Itinerary				
Web Services Framework				

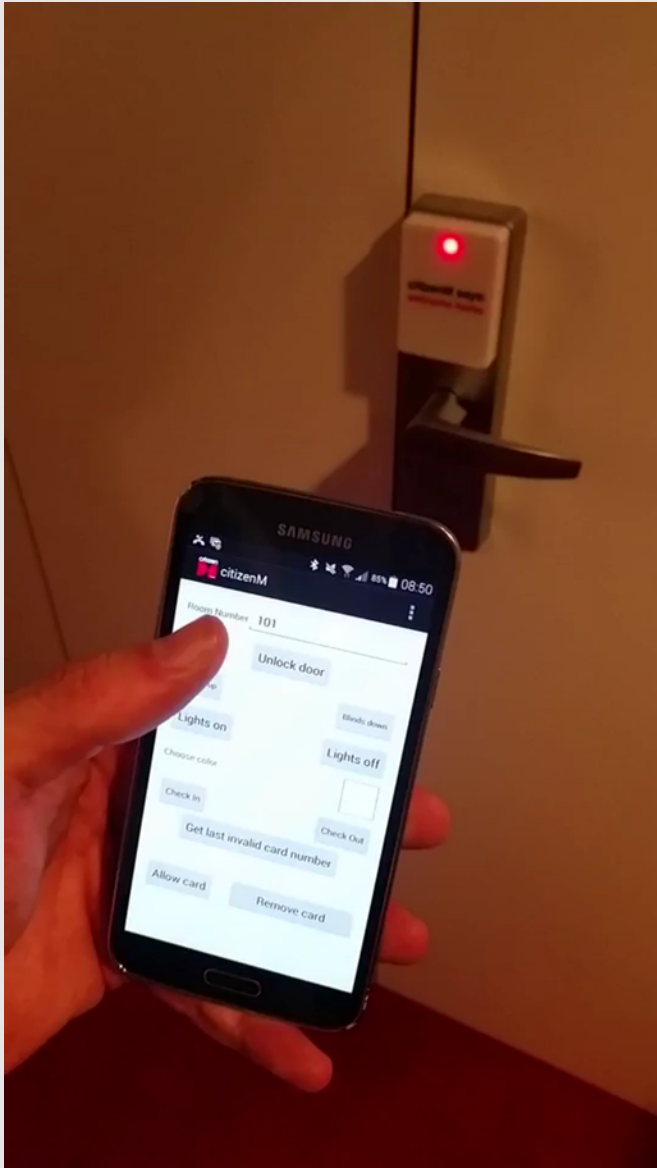


HTNG STANDARDS ALONE ARE NOT ENOUGH



How about turning this into a commercial service?

A Hospitality-specific Commercial Integration Service with PCI payment, identity and Customer Web services?



Total Decoupling of Applications

PMS and TV/VoD no longer the primary interface hubs

Service re-use demonstrated

Highly reliable and trustworthy message transport

Visibility and Management

Very high performance achieved

Installing across citizenM now

citizenM now back in control of its future

Recommended architecture for HTNG Cloud efforts

Thank You

Nick Price

NetSys Technology / CIO citizenM

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