

GS1 supporting integration through interoperability and open standards

World Beating Care Through Digital

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 @Royalpapworth



Meet the team



Royal Papworth Hospital
NHS Foundation Trust



Papworth - Our History...

- 1979** First open heart transplant
- 1982** Papworth starts coronary angioplasty
- 1984** Europe's first successful heart-lung transplant
- 1985** World's first transbronchial biopsy to detect rejection in lung transplants
- 1986** World's first heart, lung and liver transplant
- 1991** First implantable cardiac defibrillator
- 1992** First Ventricular Assist Device operation
- 1994** Adult Cystic Fibrosis Centre opens
- 2001** UK National Centre for Pulmonary Thromboendarterectomy opens
- 2006** UK's first beating heart transplant
- 2010** First subcutaneous implantable cardiac defibrillator
- 2011** UK's first Total Artificial Heart patient discharged home



The UK's first successful heart transplant patient
Keith Castle following surgery performed by Sir Terence English

How times have changed...



1983, L Ritchie

Lionel Richie "Hello....I just want to let you know...cause I wonder where you are and I wonder what you do"



2018, B Young

"Really I'm lying girl you know I just want your number, You better 079 me, 079 me, 079 me Girl I see you change your picture 'pon your WhatsApp" (*pon meaning on / upon*)

Our new Hospital



- Five operating theatres, five catheter laboratories (for non-surgical procedure) and two hybrid theatres
- Six inpatient wards, 310 beds, including a 46-bed critical care unit and 24 day beds
- Mostly en-suite, private rooms for patients

Times and Distances
 Cambridge Biomedical Campus to:

Cambridgeshire Guided Busway	
Railway station	8 minutes
City Centre	7 minutes
City Centre	17 minutes
50 per hour	
Railway station	11 minutes
City Centre	22 minutes
Port	30 minutes
City's Cross	45 minutes
Pool Street	72 minutes
Way (Junction 11)	1.8 miles
City Centre	2.2 miles
Port	29 miles
25/M11 Intersection	40 miles
ion	62 miles

Navigation Postcode: CB2 2QQ



Lorenzo EPR – Success or struggle...

- Implemented Lorenzo with full EPMA in under 7 months
- Digitised over 1m Clinical documents
- Reduction in missed doses reported on Trust incident reporting system.
- Reduced administrative and Pharmacy time for example completing forms and performing admin tasks at £42K per annum.
- Reduced patients length of stay - 130 bed days saved
- Reduced our carbon footprint by £1594
- Integration and interoperability through a new Order Communications System (Requests and Results) - interfacing with 4 systems including EPIC through our TIE Viaduct and use of bar code technology.
- Lorenzo Digital Exemplar



Electronic Prescriptions & Medicines Administration (EPMA)

Implemented as part of the Lorenzo EPR Programme in June 2017

Whole site approach

- inpatient and outpatient areas paper-free prescribing,
- First of type
- First organisation to use the Lorenzo infusions prescribing module

Integrated decision support

- Bespoke clinical decision support with conflict-based warnings for drug interactions, duplication, and contraindications

Audit trail

- Prescription and administration details clear and easily attributed to user

Downtime drug charts

- Printable drug charts available in case of system down time,

Processes improved

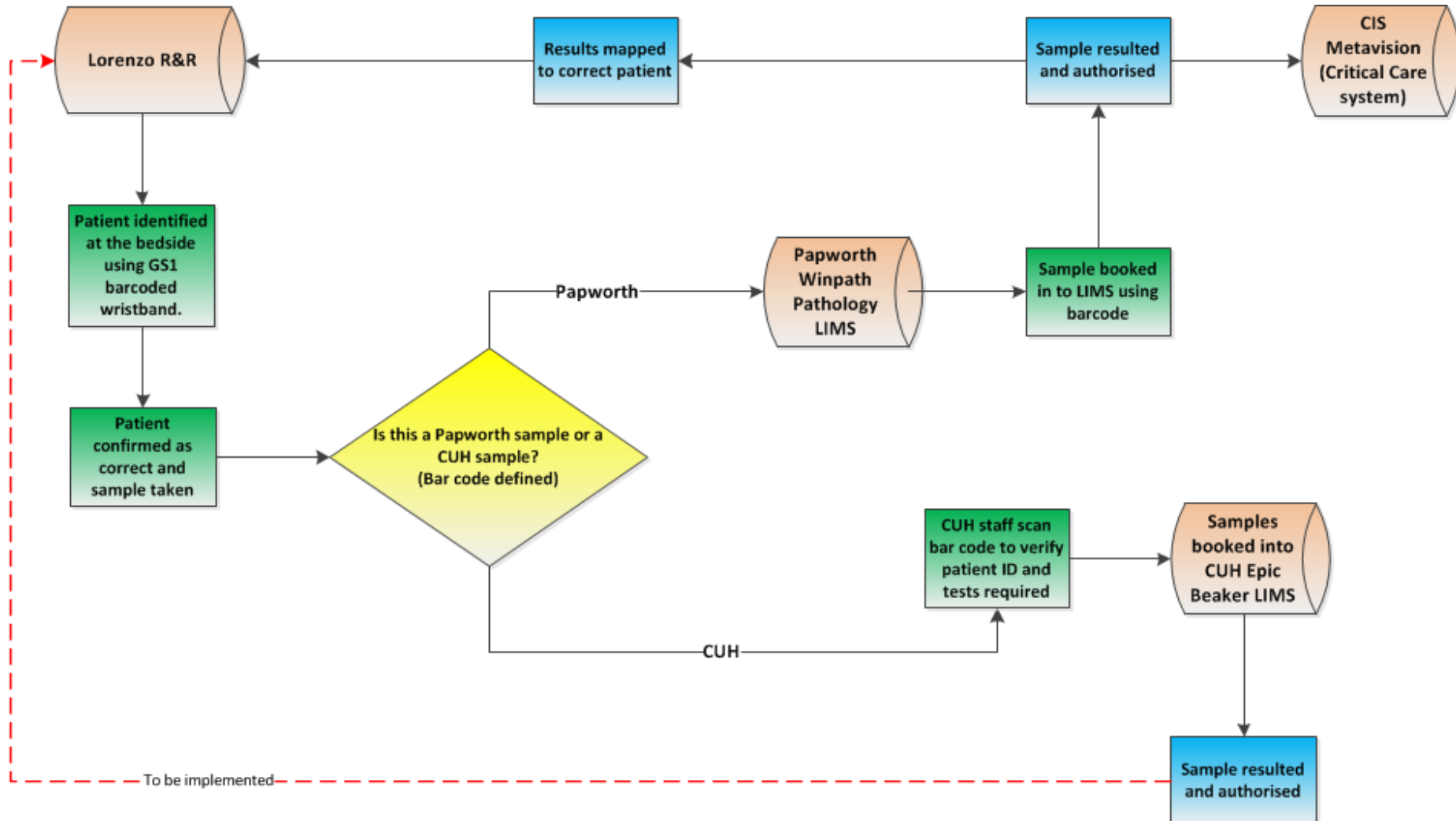
- Discharge prescribing process streamlined,
- Routine chart re-writes no longer required



























Requests and Results (Order Comms)

- A huge challenge... Decommissioning ICE and a 4 way integration
- Requests and Results (order comms) 7 Months
- Enables requests and acknowledgement of Radiology and Lab results
- In Tray functions means rapid and easy acknowledgement
- Uni Directional interface with EPIC
- Bar codes saving time with Lab staff reducing the need to type rather scan bar codes and entered direct on to EPIC
- Bi-Direction interface from EPIC to Lorenzo

Pathology Positive Patient ID pathway (PPID)



Digital Maturity Assessment (DMA)

EMR Adoption Model				
Stage	Cumulative Capabilities	15/16	16/17	17/18
Stage 7	Complete EMR integrates all clinical areas (e.g. ICT, ED, Outpatient) displacing all (Medical) paper records in the hospital; Continuity of Care standards to exchange data, Data Warehouse used as basis for clinical and business analytics.			
Stage 6	Clinical Documentation interacts with advanced Decision Support (based on discrete data elements) AND Closed Loop Medication Administration			
Stage 5	Integrated Image Management Solution (e.g. PACS) displaces all film-based images throughout the hospital			
Stage 4	Electronic Ordering provides Clinical Decision Support (based on rules engines) in at least one clinical service area and/or for medication			
Stage 3	Clinical documentation as well as Electronic ordering of Physician and/or Nursing care services; includes tracking of Medication Administration (eMAR)			
Stage 2	Clinical Data Repository/Electronic Patient Record allows collection and normalisation of data from disparate clinical sources throughout the hospital			
Stage 1	Information Systems for major ancillary departments (Laboratory, Radiology, Pharmacy) are installed or data output from external service providers are processed electronically			
Stage 0	Information Systems for major ancillary departments (Laboratory, Radiology, Pharmacy,) are not installed or data output from external service providers cannot be processed electronically			

Turn tradition on its head – try new stuff



Royal Papworth Hospital
NHS Foundation Trust



- Capacity vs demand
- Growing elderly population
- RTT and Performance Targets
- Pressure across the care System
- Financial pressures

1. What if we empower the patient?

- Self-service...
- Patient portals
- Patients on-line and visualise process
- Patients use self service Kiosks
- Text alerting with responsibility
- Wifi and entertainment



2. What if we use technology to help signpost citizens out of the system?

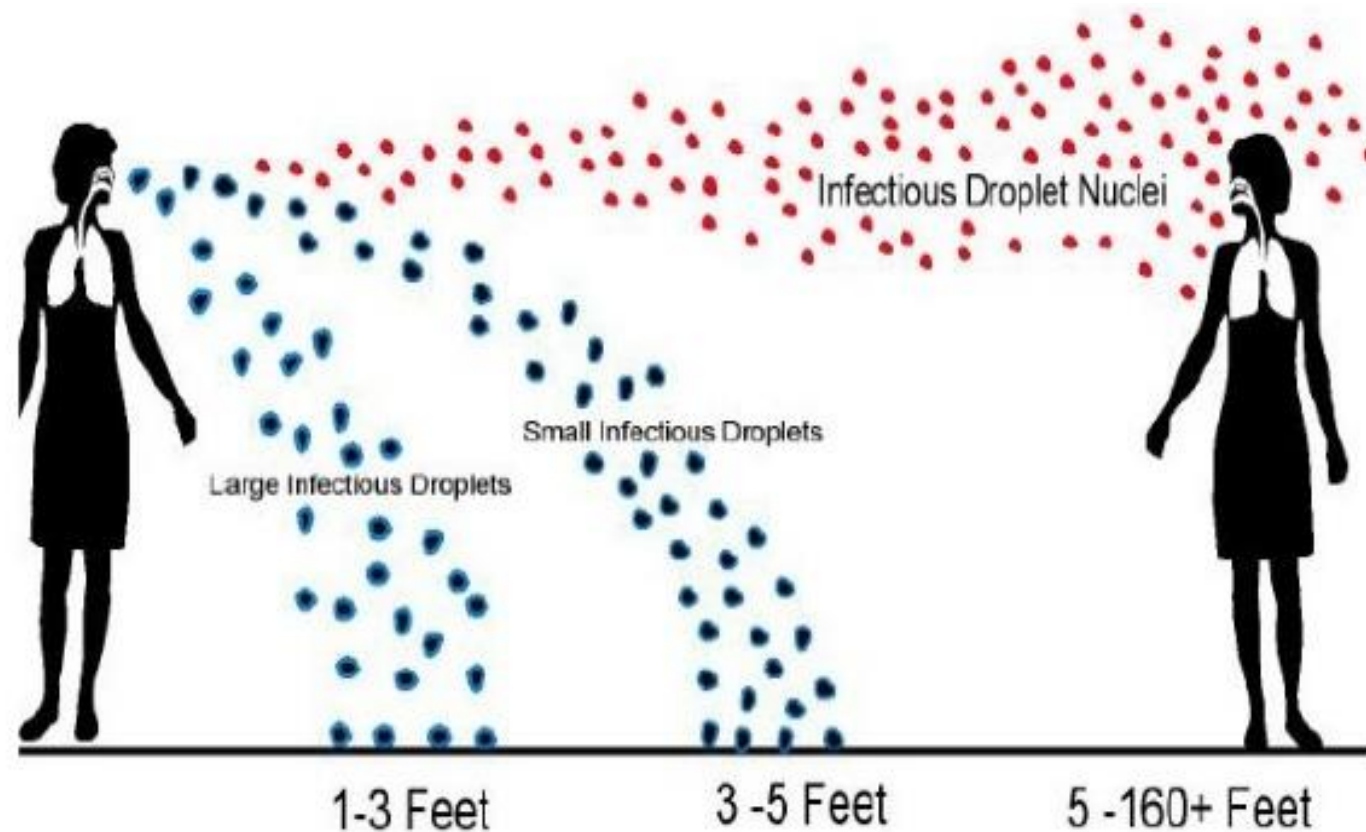
- Connected care and interoperability
- Advice and Guidance and educating public on services
- Telemedicine
- Audio visual technology
- Unified communications
- Decision trees/support (Watson) best use of resources

3. What we can learn from retail?

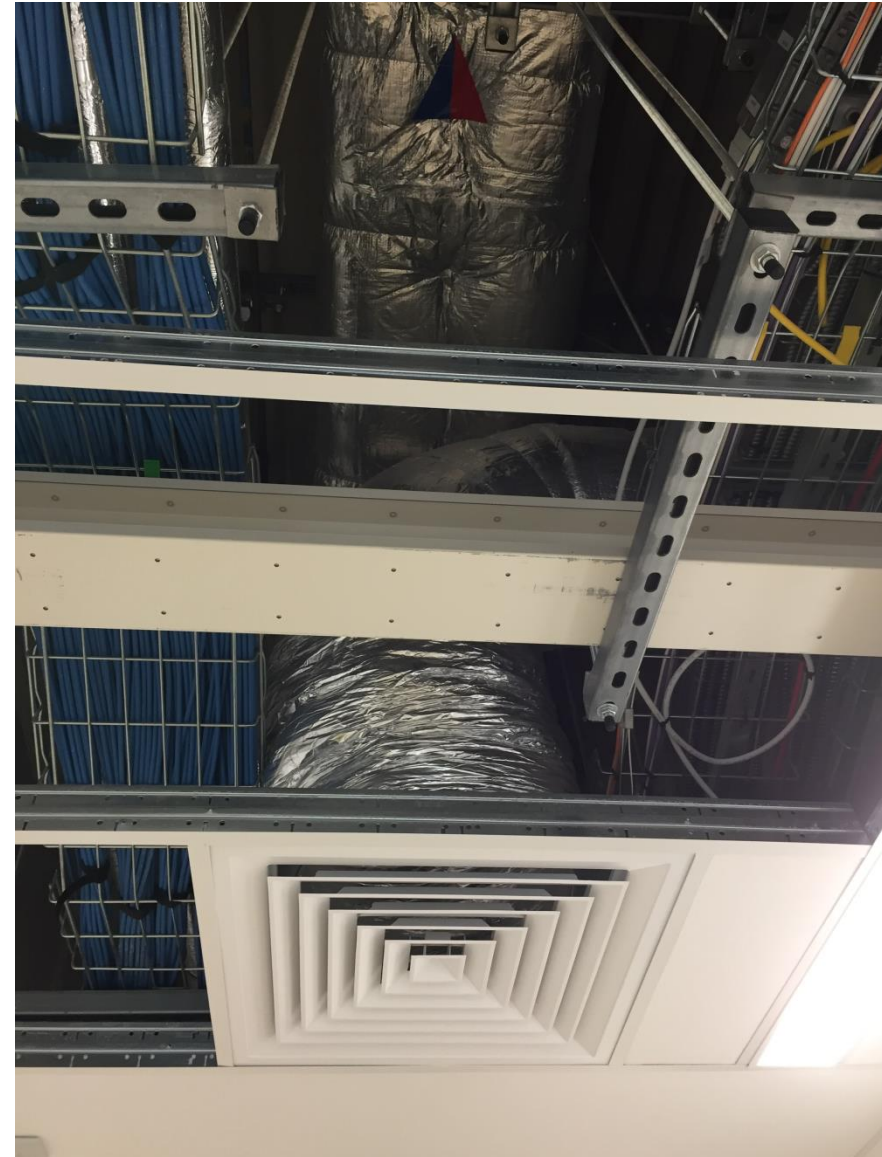
- Access
- Track and trace reduces waste
- Maximise activity
- Person, Product, Place
- Use what you need and replenish (automation)
- GS1 Barcode standards



Infection Droplets and Droplet Nuclei travel lengths

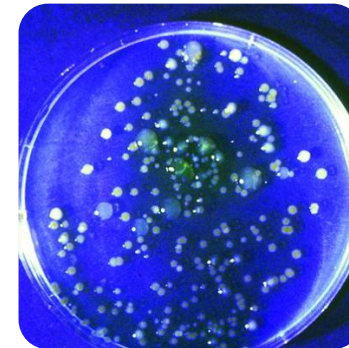


15 air changes per hour in rooms and adjacent corridors





NHS
North Hospital
Foundation Trust

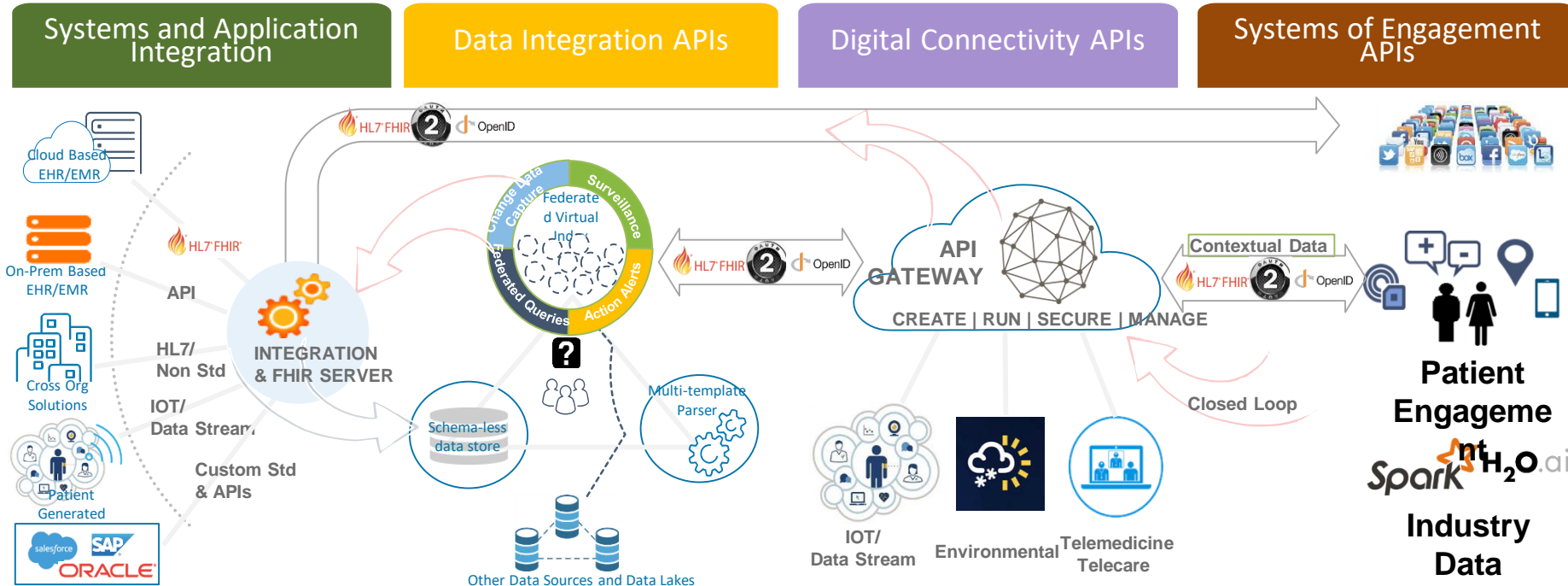


GS1 Focus

- **Nurse led** Steering Group
- **Road map** for core enablers

Focus Priorities for the new Hospital

- Location numbering
- RFID Asset Management Medical Equipment
- Patient wristbands
- Staff swipe cards
- Smart fridges
- Blood track
- Interoperability



Vendor Neutral Connectivity

- Support for FHIR, API, IOT and non-compliant applications via virtual data integration

Store, Parse & Index

- Build longitudinal patient record based on persisted and virtual data indexes
- Schema-less data-store
- Surveillance and alerting

API Gateway

- Portfolio of published API (FHIR)
- Build composite APIs and applications based on internal API and external APIs.
- Data Stewardship and Governance

Innovate Without Lock-in

- Exploit connectivity to broad spectrum of data services
- Enable Digital enterprise landscape
- Curated data for upstream value

Royal Papworth Hospital Today

- First open heart transplant in 1979
- 100th anniversary – 2018 is our centenary year
- 98% of our patients said they would recommend us to friends and family
- First centre in UK to offer Balloon Pulmonary Angioplasty (BPA) for treatment of pulmonary hypertension
- Over 100 heart and lung transplants and a record 5 heart transplants in 36 hours
- Royal status received in 2017
- Launch of a new Digital Strategy
- Lorenzo as our EPR, EPMA and Order Comms in 14 months and integration with EPIC through our Viaduct TIE – A UK first!
- Film launched in 2018

New state-of-the-art hospital opens next month!

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