Elixion IoT Hub ←→ PDMS Integration Document

1) Integration approach (HL7)

The integration follows a standard HL7 v2 workflow through the hospital gateway:

1. **Inbound to Elixion (Clinic → Elixion): ORM^O01 (Order Message)**
    - The PDMS/KIS triggers an HL7 **ORM^O01** whenever a urine monitoring order is created (e.g., LANF order).
    - This ORM contains patient identity and visit/case details and is sent to the Elixion Gateway (Niviu).
    - Our system parses the ORM using the agreed HL7 mapper (tool in our admin panel) and creates/updates the corresponding order/patient in our database.
2. **Outbound to PDMS (Elixion → Clinic): ORU^R01 (Observation Result)**
    - For every device observation (delta urine output), Elixion Gateway sends an HL7 **ORU^R01** to the PDMS via the gateway endpoint provided by the clinic.
    - Measurement values are sent in **OBX** segments; the observation window is represented by **OBR-7 (start)** and **OBR-8 (end)**.

This model is fully compatible with your gateway - managed network routing.

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2) Steps required on the clinic side

A. Gateway / network setup

- Provide the **gateway IP and port** for:
    1. **ORM^O01 → Elixion** (clinic to Elixion Gateway)
    2. **ORU^R01 → PDMS** (Elixion Gateway to clinic PDMS)
- Ensure MLLP routing is enabled between systems at the gateway.
- Allowlist the Elixion Gateway on the hospital network.

B. HL7 trigger configuration in PDMS/KIS

- Configure the PDMS/KIS to create an **LANF order** and send an **ORM^O01** automatically to Elixion.
- Confirm which system triggers the order (PDMS or KIS). In both cases the gateway forwards to Elixion.

C. HL7 mapping alignment

- Verify/confirm the HL7 field mapping (PID/PV1/ORC/OBR) matches the agreed paths.
- We will provide a small test plan and validate 1-2 sample messages together.

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3) Prerequisites to clarify upfront

1. **HL7 version** used by the clinic (e.g., 2.5.x or 2.8)
2. **Coding expectations**
    - Service/order code for urine monitoring (LANF)
    - Observation code system (LOINC preferred if available; otherwise, hospital-specific codes)
3. **Patient/case identifiers**
    - Which fields are used as the **case/visit ID** (typically PV1-19)
    - Which fields are used as the **patient ID** (typically PID-3)
4. **Observation cadence and intervals**
    - PDMS interval definition (e.g., hourly windows planned before measurement)
    - We will return real measured windows and deltas in ORU.

5. **ACK handling**
    - Gateway/PDMS ACK behavior (AA/AE/AR)
    - Error/retry policy expectations

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4) Typical timeline

With all prerequisites clarified, a realistic timeline is:

1. **Week 1:**
    - Network/gateway endpoints delivered
    - HL7 trigger configuration started
    - Exchange of 1–2 sample ORM/ORU messages
2. **Week 2:**
    - Joint mapping validation (test messages)
    - End-to-end test in staging or test environment
3. **Week 3:**
    - Pilot in production with first 3/5 systems
    - Monitoring of ACKs / data quality
    - Adjustments if needed

So usually **2–3 weeks** from kickoff to a stable productive setup, depending on internal IT availability.

5) On-site support

Yes, we can support on-site if required.

Typical approach:

- Remote pre-configuration and HL7 testing first
- On-site support for the first installation day(s) if the clinic prefers
- Follow-up remote monitoring during the pilot phase

We'll coordinate this with the clinic's IT/PDMS team and your product team.

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6) HL7 message examples (aligned with our system)

6.1 Inbound ORM^O01 (Clinic → Elixion Gateway)

This is fully compatible with our importer and mapper:

```
MSH|^~\&|SOARIAN||ELIXION|SMARTCATH|20250717152037||ORM^O01|99987513
|P|2.8

PID|1||20352619^^^HOSP^MR||ZZ_Showday^Soarianne^^^^^L||19910127|F

PV1|1|I|45^^^KN|||||||KN||||||N|||51806843

ORC|NW|14676175-00002||61236871|AC

OBR|1|14272098||5678-9^Urine Output^LN^YCAT^Kopplung SmartCatheter
YCAT^LANF|ROUTINE|20250718080000|20250718081500
```

Key usage in Elixion:

- PID-3 → external patient ID
- PID-5 / PID-7 → patient demographics
- PV1-19 → case/visit ID
- ORC-2 / ORC-3 → placer/filler order numbers
- OBR-4 / OBR-7 / OBR-8 → order code (required) and planned interval (not required)

6.2 Outbound ORU^R01 (Elixion Gateway → Clinic PDMS)

This is what we send back per observation window:

```
MSH|^~\&|EXS|ELIXION|PDMS|HOSPITAL|20250718081530||ORU^R01|EXS-
20250718081530-0001|P|2.5.1

PID|1||20352619^^^HOSP^MR||ZZ_Showday^Soarianne^^^^^L||19910127|F

PV1|1|I|KN-45

ORC|RE|14676175-00002|61236871

OBR|1|14676175-00002|61236871|5678-9^Urine
Output^LN|R|20250718080000|20250718081500

OBX|1|NM|5678-9^Urine Output
Delta^LN||45|mL|||N|||F|||20250718081500
```

Key meanings:

- OBR-7 / OBR-8 → **actual measured window** (start/end)
- OBX-5 → delta volume within the window
- OBX-6 → unit (UCUM / standard mL)
- The order is correlated via ORC-2/3 and the case/patient IDs.