Screenshots Module 2: PHTRS summarizer

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CSC505: Principles of Programming

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December 14, 2025

Screenshots Module 2: PHTRS summarizer

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PS P:\CSU-projects\CSC-505-Programs\CTA-Module-5> uv run python phtrs_summary.py
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PHTRS Actors

Actor	Description	Primary/ Secondary	Abstract/ Concrete	Directness	Org Boundary
A00-Staff User (abstract)	The actor is an abstract actor of a general City/DPW staff that can access PHTRS interfaces.	Primary	Abstract	Indirect	Internal
A01-Citizen	The actor is a public user who can report potholes, track report status, and submit damage claims on the PHTRS website.	Primary	Concrete	Direct	External
A02-Public Works Admin	The actor is a DPW employee who can manage reports and assign crews.	Primary	Concrete	Direct	Internal
A03-Repair Crew	The actor is a DPW employee field crew member who can access and view work orders, log work, and update repair status.	Primary	Concrete	Direct	Internal
A04-Claims Processor	The actor is the city's claims function/department that can process routed claims and update claim outcomes/status.	Secondary	Concrete	Direct	Internal
A05-GIS/Address Service	The actor is an external service/system that can validate addresses and determine districts.	Secondary	Concrete	Direct	External System
A06-Notification Service	The actor is an external service/system that can be used to deliver notifications (email/SMS/in-app).	Secondary	Concrete	Direct	External System

PHTRS Use Cases

Use Case	Description	Includes	Extends
UC01-Report Pothole	Representing a citizen reporting a pothole street address, severity/size (1-10), and location details (e.g., middle of road, curb).	UC13-Validate Address UC14-Determine District UC15-Calculate Repair Priority UC03-Submit Damage Claim	UC11-Upload Photo
UC02-Track Report Status	Representing a citizen viewing reported potholes updates.		
UC03-Submit Damage Claim	Representing a citizen submitting a damage claim including the citizen's name, address, phone number, damage type, and dollar amount (and a brief damage description).		UC12-Upload Report
UC04-Review/Validate Pothole Report	Representing an admin employee reviewing submitted pothole reports and validating them.	UC21-Report Database	
UC05-Assign Repair Crew	Representing an admin employee assigning/scheduling/queuing crew to a pothole repair.	UC16-Create/Update Work Order UC17-Notify Crew / Citizen	
UC06-Update Pothole Record	Representing an admin employee updating pothole record fields (status, notes, metrics, etc.).		
UC07-Generate Reports	Representing an admin employee creating reports (e.g., by district/priority/status/workload).		
UC08-View Assigned Work Orders	Representing a repair crew employee viewing potholes repair assignments and associated work orders via a mobile/tablet interface.		
UC09-Log Repair Work	Representing a repair crew employee logging in hours of work, number of people on the crew, equipment assigned/used, and filler material used; it supports repair cost calculation.	UC10-Update Repair Status UC06-Update Pothole Record UC16-Create/Update Work Order	
UC10-Update Repair Status	Representing a repair crew employee updating hole status (work in progress, repaired, temporary repair, not repaired).		
UC11-Upload Photo	Representing an optional photo upload to support a pothole report from a citizen.		
UC12-Upload Report	Representing an optional upload of a report (e.g., photos, receipts, attachments).	UC21-Report Database	
UC13-Validate Address	Representing the system validating the street address (via GIS/address services).		
UC14-Determine District	Representing the system determining a city district from an address.		
UC15-Calculate Repair Priority	Representing the system determining repair priority from pothole severity/size.		
UC16-Create/Update Work Order	Representing interface usage for creating/updating a work order associated with a pothole, including: pothole location and size, repair crew identifying number, number of people on the crew, equipment assigned, hours applied to repair, hole status, amount of filler material used, and cost of repair (calculated based on time, labor, equipment, and materials).		
UC17-Notify Crew / Citizen	Representing the system sending notifications (email/SMS/in-app) to employees and citizens.		
UC18-Review Damage Claim	Representing an admin employee reviewing and processing damage claim.	UC19-Route Claim for Processing	
UC19-Route Claim for Processing	Representing a claim being sent to a claims processing function/department.		
UC20-Update Claim Status	Representing an admin/claims employee updating claim status/outcomes.	UC17-Notify Crew / Citizen	
UC21-Report Database	Representing storing and retrieving reports in the PHTRS report database (report records and supporting attachments) for validation, tracking, and processing.		
US00-Authenticate Staff User	Representing a staff user being authenticating via a secure login.		

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│                                    Actor Summaries                                     │
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│  A00-Staff User (abstract) — The actor is an abstract actor of a general City/DPW staff that can access PHTRS
│  interfaces.
│    Note: Abstract generalization only; specializations carry the functional association lines.
│    Associated use cases:
│      - US00-Authenticate Staff User: Representing a staff user being authenticating via a secure login.
│
│  A01-Citizen — The actor is a public user who can report potholes, track report status, and submit damage claims on
│  the PHTRS website.
│    Associated use cases:
│      - UC01-Report Pothole: Representing a citizen reporting a pothole street address, severity/size (1-10), and
│        location details (e.g., middle of road, curb).
│      - UC02-Track Report Status: Representing a citizen viewing  reported potholes updates.
│
│  A02-Public Works Admin — The actor is a DPW employee who can manage reports and assign crews.
│    Associated use cases:
│      - US00-Authenticate Staff User: Representing a staff user being authenticating via a secure login.
│      - UC04-Review/Validate Pothole Report: Representing an admin employee reviewing submitted pothole reports and
│        validating them.
│      - UC05-Assign Repair Crew: Representing an admin employee assigning/scheduling/queuing crew to a pothole repair.
│      - UC06-Update Pothole Record: Representing an admin employee updating pothole record fields (status, notes,
│        metrics, etc.).
│      - UC07-Generate Reports: Representing an admin employee creating reports (e.g., by
│        district/priority/status/workload).
│      - UC18-Review Damage Claim: Representing an admin employee reviewing and processing damage claim.
│      - UC20-Update Claim Status: Representing an admin/claims employee updating claim status/outcomes.
│
│  A03-Repair Crew — The actor is a DPW employee field crew member who can access and view work orders, log work, and
│  update repair status.
│    Associated use cases:
│      - US00-Authenticate Staff User: Representing a staff user being authenticating via a secure login.
│      - UC08-View Assigned Work Orders: Representing a repair crew employee viewing potholes repair assignments and
│        associated work orders via a mobile/tablet interface.
│      - UC09-Log Repair Work: Representing a repair crew employee logging in hours of work, number of people on the
│        crew, equipment assigned/used, and filler material used; it supports repair cost calculation.
│      - UC10-Update Repair Status: Representing a repair crew employee updating hole status (work in progress,
│        repaired, temporary repair, not repaired).
│
│  A04-Claims Processor — The actor is the city's claims function/department that can process routed claims and update
│  claim outcomes/status.
│    Associated use cases:
│      - US00-Authenticate Staff User: Representing a staff user being authenticating via a secure login.
│      - UC19-Route Claim for Processing: Representing a claim being sent to a claims processing function/department.
│      - UC20-Update Claim Status: Representing an admin/claims employee updating claim status/outcomes.
│
│  A05-GIS/Address Service — The actor is an external service/system that can validate addresses and determine
│  districts.
│    Associated use cases:
│      - UC13-Validate Address: Representing the system validating the street address (via GIS/address services).
│      - UC14-Determine District: Representing the system determining a city district from an address.
│
│  A06-Notification Service — The actor is an external service/system that can be used to deliver notifications
│  (email/SMS/in-app).
│    Associated use cases:
│      - UC17-Notify Crew / Citizen: Representing the system sending notifications (email/SMS/in-app) to employees and
│        citizens.
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Diagram Structure Summary
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System: PHTRS (Web-Based System)
Totals:
    Actors=7 (Primary=3, Secondary=3, Abstract=1)
    Use Cases=22
    Relationships=35 (Actor-UseCase=17, <<include>>=13, <<extend>>=2, Actor Generalization=3).
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Actors and intent (from the PHTRS Actors table):
- Primary: A01-Citizen, A02-Public Works Admin, A03-Repair Crew
- Secondary: A04-Claims Processor, A05-GIS/Address Service, A06-Notification Service
- Abstract: A00-Staff User (abstract)
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High-level structure:
- Citizen flow: UC01-Report Pothole → UC02-Track Report Status (report a pothole, then track status).
- Staff access is gated by authentication: US00-Authenticate Staff User.
- Operational flow: staff review/validate reports, assign crews and work orders, then crews log work and update status
  (UC04-Review/Validate Pothole Report, UC05-Assign Repair Crew, UC09-Log Repair Work).
- Claims flow: UC03-Submit Damage Claim supports downstream claim review and status updates (UC18-Review Damage Claim,
  UC20-Update Claim Status).
- Report storage: UC21-Report Database is included where citizen reports/evidence are stored/retrieved (e.g., via
  UC04-Review/Validate Pothole Report, UC12-Upload Report).
- Notifications: UC17-Notify Crew / Citizen supports key workflow transitions (assignment and claim status updates).

Optional behavior modeled with <<extend>>: UC11-Upload Photo → UC01-Report Pothole; UC12-Upload Report → UC03-Submit
Damage Claim.
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Relationships:
- Full line "————" Association Relationship is used to link an actor to a use case.
- Arrow dotted line <<include>> "--->" Association Relationship is used to represent use cases included in other use
  cases.
- Arrow dotted line <<extend>> "<---" Association Interface Relationship is an inheritance relationship between use
  cases (child extends parent).
 - Arrow full line "<|—" Generalization is also an inheritance relationship, but between actors (child of parent).
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PS P:\CSU-projects\CSC-505-Programs\CTA-Module-5> |
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12/15/2025