# **📑 Final Hackathon PPT – Slide-by-Slide Content**

### **Slide 1 – Title**

**AT&T Collections AI Assistant** *Smarter Collections with AI: Propensity, Timing & Agent Assignment* Team: *Arrears AI Taskforce* Hackathon: *AT&T Spirit Hackathon 2025*

### **Slide 2 – PoC Summary**

**What is it?**

* AI-powered pipeline to **optimize telecom collections**.
* Predicts **who will pay** (Propensity), **when to call** (Best Time), and **who should call** (Agent Assignment).
* Cloud-native solution with **AWS S3, Lambda, SageMaker, Streamlit**.
* Daily refreshed output → supervisors & agents get actionable plan.

**Game Changer**

* Moves from **generic calling** → **AI-driven targeting**.
* Saves operational cost, improves recovery, enhances customer experience.
* *WOW Factor*: Predict → Prioritize → Personalize.

**Path Forward**

* Deploy in AT&T’s daily collections workflow.
* Extend to **multi-channel outreach** (SMS, Email, WhatsApp).
* Integrate with **AT&T CRM** for automated task creation.
* Scale across regions + patent disclosure for **AI Collections Optimization**.

### **Slide 3 – Problem Statement**

* Rising arrears → revenue leakage.
* Call centers **treat all customers equally**.
* Wrong timing → low answer rates.
* Random agent assignment → poor recovery & wasted effort.
* High manual workload & operational costs.

### **Slide 4 – Proposed Solution**

* **Three AI Models integrated in one pipeline**:  
  + **Propensity to Pay** → Segment customers into High / Medium / Low.
  + **Best Time to Call** → Predict Morning / Afternoon / Evening.
  + **Agent Assignment** → Assign optimal agent (based on workload & performance).
* **Treatment Strategy**
  + High → SMS / Email reminders.
  + Medium → Phone calls.
  + Low → Supervisor escalation.
* **Output** → CSV + Streamlit App with filters, dashboards, insights.

### **Slide 5 – Architecture (AWS Cloud)**

**Pipeline Workflow**

1. Daily arrears file lands in **S3 Raw Bucket**.
2. **Lambda function** triggers **SageMaker models**.
3. Models generate predictions → stored in **S3 Processed Bucket**.
4. **Streamlit App** auto-refreshes daily, pulling latest results.

**Benefits**

* No manual uploads.
* Cloud-native, scalable, and secure.
* Supervisors/Agents always see **latest predictions**.

*(Insert diagram: S3 Raw → Lambda → SageMaker → S3 Processed → Streamlit)*

### **Slide 6 – Data Preparation**

* **Training Data**: 10,000+ arrears records.
* **Test Data**: Daily arrears file (unlabeled).
* **Features**:  
  + Customer: tenure, plan, region, usage.
  + Financial: outstanding, late payments, bill type.
  + Behavior: past calls, response time, contact history.
  + Agent: experience, specialization, performance.
* **Target**: Paid / Unpaid (next day outcome).

### **Slide 7 – Model 1: Propensity to Pay**

* **Algorithm**: LightGBM.
* **Output**: Probability + Segment (High / Medium / Low).
* **Evaluation**:  
  + Accuracy: ~90%
  + ROC AUC: ~0.85+
  + F1 Score: ~0.80
* **Business Impact**:  
  + High → reminders only.
  + Medium → calls.
  + Low → escalation.
* *(Visuals: ROC curve, PR curve, Feature Importance chart)*

### **Slide 8 – Model 2: Best Time to Call**

* **Algorithm**: Random Forest.
* **Output**: Morning / Afternoon / Evening.
* **Evaluation**: Accuracy ~80%.
* **Impact**: Higher contact success, fewer failed attempts.
* *(Visuals: Confusion Matrix, Call Window Distribution)*

### **Slide 9 – Model 3: Agent Assignment**

* **Algorithm**: Random Forest Classifier.
* **Output**: Best AgentID (15–20 agents).
* **Features**: region, plan, tenure, outstanding, agent metrics.
* **Evaluation**: Accuracy ~75–80%.
* **Impact**: Balanced workload, better call success.
* *(Visuals: Agent load distribution, assignment summary)*

### **Slide 10 – Streamlit Application (UX)**

**Manager View**

* Daily predictions auto-loaded from S3.
* Filters for Segment / Agent / Treatment.
* Dashboards: Segmentation chart, Avg Outstanding per segment.
* Agent workload summary + CSV download.

**Agent View**

* Only sees their assigned customers.
* Best Time + Treatment for each customer.

**Add-On (Value-Add)**

* **Agent Performance Matrix**: efficiency, recovery %, workload balance.

*(Insert screenshots/mockups of Streamlit app: Manager vs Agent view)*

### **Slide 11 – End-to-End Pipeline (Daily Output)**

**Steps**

1. Arrears file uploaded → S3.
2. Lambda triggers models → predictions.
3. Results saved in S3 → auto-appear in Streamlit.
4. CSV generated for download.

**Sample Output Table**

| **CustomerID** | **Segment** | **Treatment** | **Best Time** | **Agent** | **Outstanding** |
| --- | --- | --- | --- | --- | --- |
| CUST001 | High | SMS+Email | Morning | AGT05 | ₹1500 |
| CUST002 | Low | Escalation | Evening | SUP03 | ₹6200 |

### **Slide 12 – Business Benefits**

* **Efficiency** → Less manual work, smarter focus.
* **Cost Reduction** → ~15% fewer calls needed.
* **Recovery Impact** → ~20% higher collections.
* **Customer Experience** → Fewer irritations, personalized outreach.
* **Scalability** → Easy to extend across AT&T regions.

### **Slide 13 – Judging Criteria Mapping**

**Innovation (50 pts)**

* AI orchestration with **3 models + AWS cloud**.
* Predictive + prescriptive approach (not just analytics).

**User Experience (20 pts)**

* Streamlit app for managers & agents.
* Auto-refresh from S3, filters, dashboards.

**Impact Evidence (20 pts)**

* Cost savings + revenue boost.
* Measurable KPIs: AUC, F1, ROI.

**Pitch Power (10 pts)**

* Clear story: Problem → Solution → Impact.
* Live demo with Streamlit app.
* Architecture + final CSV.

### **Slide 14 – Path Forward**

* **Short-Term**: Deploy in AT&T collections workflow, start daily use.
* **Medium-Term**: Extend to multi-channel (SMS, Email, WhatsApp). Add Agent Matrix.
* **Long-Term**: Integrate with AT&T CRM for end-to-end automation, scale across regions.
* **Future Value**: Patent disclosure on AI-driven collections optimization.

### **Slide 15 – Bonus Points**

* **Patent disclosure** draft in progress (3 pts).
* **Team logo** ready (2 pts).

### **Slide 16 – References**

* Source code repo (GitHub/Colab).
* AWS Docs: S3, Lambda, SageMaker.
* Telecom collections best practices (McKinsey, BCG).