



HackAP Hackathon – Tools for Tribals

Problem Statements

Note: Please read the pages after the problem statements to learn why these problems matter, the key requirements for all the problems and the difficulty levels.

Problem 1: Interest Calculator with Loan Tracker

What's the Problem?

- Tribal communities often fall victim to predatory lending practices with exploitative interest rates
- Many cannot calculate compound interest or understand loan terms, leading to debt traps
- Informal lenders (money lenders) charge excessive rates without transparent documentation
- Lack of tracking systems leads to disputes about payments made and amounts owed
- Limited financial literacy makes it difficult to compare loan options or negotiate fair terms

What You Need to Design:

- Digital tool (mobile app + website) that calculates simple and compound interest transparently
- Loan tracking system that records all payments, remaining balance, and payment history
- Multi-lingual interface (Telugu primary, English for technical terms)
- Voice-enabled features (speech-to-text and text-to-speech) for non-literate users
- Offline functionality with cloud sync when internet is available
- Alert system for upcoming payment due dates
- Comparison tool to evaluate different loan offers
- Integration with formal banking options and government loan schemes

Real-World Impact:

This could protect tribal communities from financial exploitation, help them make informed borrowing decisions, and reduce debt-related disputes. It would empower them to negotiate better terms and access formal credit systems.





Problem 2: Digital Household Passbook

What's the Problem?

- Tribal families struggle to track their income and expenses across multiple seasons
- Irregular income from forest produce, agriculture, and daily wages makes budgeting difficult
- Lack of financial records affects eligibility for government schemes and formal loans
- No systematic way to plan for seasonal variations in income and expenses
- Difficulty in identifying spending patterns or areas where money can be saved

What You Need to Design:

- Digital income and expenditure tracking system (mobile app + website)
- Voice-enabled data entry for illiterate users (Telugu speech recognition)
- Offline-capable with automatic sync when connected
- Category-wise expense tracking (food, healthcare, education, farming, etc.)
- Seasonal income pattern recognition and forecasting
- Visual dashboards showing spending trends and savings potential
- Integration with government scheme eligibility criteria
- Family member access controls for shared household management
- Backup and restore functionality

Real-World Impact:

This could help tribal families better manage their finances, qualify for government schemes, build savings habits, and make informed spending decisions. It would create a foundation for financial inclusion and planning.





Problem 3: Community/Village Bank - SHG Management Tool

What's the Problem?

- New Self Help Groups (SHGs) lack proper systems for managing community savings and borrowings
- Manual record-keeping leads to disputes and lack of transparency
- Difficulty in tracking member contributions, loan disbursements, and repayments
- Limited integration with government schemes like NRLM, SHG bank linkage programs
- Lack of financial literacy among SHG members affects group sustainability
- No standardized system for interest calculations and profit sharing

What You Need to Design:

- Comprehensive SHG management platform (mobile app + website)
- Member registration and contribution tracking system
- Loan application, approval, and repayment management
- Transparent interest calculation and profit distribution
- Integration with government SHG schemes and banking systems
- Multi-lingual interface with voice support (Telugu primary)
- Offline functionality with cloud synchronization
- Meeting management and minute recording features
- Financial reporting and audit trail capabilities
- Training modules for SHG best practices

Real-World Impact:

This could strengthen community-based financial systems, improve transparency in SHG operations, and facilitate better integration with formal banking. It would help build sustainable community banks that serve tribal areas effectively.





Problem 4: Market Prices Repository with Advisory System

What's the Problem?

- Tribal communities don't have access to real-time market prices for their produce (cashews, jackfruit, rice, forest products, etc.)
- Middlemen exploit price information asymmetry to pay below-market rates
- Lack of information about multiple markets leads to selling at the nearest (often lowest-paying) location
- No consideration of transportation costs when deciding where to sell
- Price volatility and seasonal variations are not tracked or predicted
- Limited knowledge about product grading, quality standards, and value addition opportunities

What You Need to Design:

- Real-time market price tracking system for 50+ tribal products including traditional/forest produce
- Location-based price comparison with distance and transportation cost calculations
- Advisory engine that suggests optimal selling locations and timing
- Price trend analysis and seasonal forecasting
- Contact details of buyers, mandis, and cooperative societies
- Price alert system for target price achievements
- Quality grading guidelines and value addition suggestions
- Integration with government e-NAM platform and local mandis
- Offline price caching with periodic updates
- Multi-lingual interface (Telugu primary) with voice features

Real-World Impact:

This could help tribal producers get fair prices for their produce, reduce exploitation by middlemen, and increase their agricultural income. It would connect them to better markets and improve their negotiating power.





Problem 5: Integrated Crop/Farm Management System

What's the Problem?

- Tribal communities typically grow only 1-2 crops (mainly rice) while delta regions grow 2-3 crops annually
- Limited knowledge about inter-cropping, multi-cropping, and yield improvement techniques
- No systematic record-keeping of crop performance, expenses, and yields
- Lack of proper crop planning leads to suboptimal land utilization
- Limited adoption of modern farming techniques alongside traditional methods
- No centralized information about storage facilities, godowns, and storage best practices
- Seasonal planning is not optimized for maximum productivity and income

What You Need to Design:

- Comprehensive farm registry with crop records, planning, and harvest tracking
- Multi-cropping and inter-cropping advisory system with local crop compatibility
- Yield improvement suggestions combining traditional and modern techniques
- Seasonal crop calendar with optimal planting and harvesting times
- Expense tracking and profitability analysis per crop
- Storage tips and nearest godown/warehouse information
- Weather integration for informed farming decisions
- Success stories and case studies from similar regions
- Step-by-step farming guides with visual aids
- Voice-enabled data entry and advisory (Telugu primary)
- Offline functionality with sync capabilities

Real-World Impact:

This could help tribal farmers diversify their crops, improve yields, and increase annual income. It would introduce them to modern techniques while respecting traditional knowledge, leading to sustainable agricultural development.





Problem 6: Organic Advisory System with Photo Recognition

What's the Problem?

- Tribal communities face crop diseases and pest attacks but lack knowledge about organic solutions
- Limited access to agricultural extension services and expert advice
- Overuse of chemical pesticides affects soil health and increases costs
- Rich traditional knowledge about organic farming is not being systematically utilized
- Difficulty in identifying diseases, pests, and nutrient deficiencies in crops
- Weather-related crop planning is not integrated with pest/disease management

What You Need to Design:

- AI-powered crop photo analysis for disease and pest identification
- Organic solution recommendations using locally available materials
- Traditional knowledge database integrated with modern organic practices
- Step-by-step organic fertilizer and pesticide preparation guides
- Seasonal advisory calendar for preventive organic treatments
- Weather-based alerts and recommendations
- Community knowledge sharing platform
- Success tracking for different organic treatments
- Video tutorials and voice instructions (Telugu primary)
- Offline capability for remote areas
- Integration with local organic input suppliers

Real-World Impact:

This could reduce input costs, improve soil health, and provide sustainable farming solutions to tribal communities. It would preserve traditional knowledge while introducing scientific organic practices, leading to healthier crops and environment.





Problem 7: Healthcare Access & Telemedicine Platform

What's the Problem?

- Remote tribal communities lack access to healthcare facilities & qualified doctors
- Nearest hospitals or Primary Health Centers (PHCs) are far away - difficult terrain
- Traditional healing knowledge is being lost as elder practitioners pass away
- Limited awareness about government health schemes and vaccination programs
- Emergency medical situations have no immediate support or guidance system
- Maternal and child healthcare suffers due to lack of regular monitoring
- Medicine availability at local pharmacies is unpredictable and not tracked

What You Need to Design:

- Comprehensive telemedicine platform (mobile app + website) with video consultation capability
- AI-powered symptom checker with traditional remedy suggestions from elder knowledge
- Healthcare facility locator with real-time bed availability and specialist info
- Traditional medicine knowledge preservation database with audio/video content
- Emergency alert system with GPS location sharing to nearest medical facilities
- Medicine availability tracker for local pharmacies and medical shops
- Health scheme awareness module with eligibility checker and application guidance
- Maternal and child health tracking with vaccination reminders and milestones
- ASHA worker coordination system for community health programs
- Multi-lingual interface (Telugu primary) with voice-enabled consultations
- Offline health education content with periodic sync

Real-World Impact:

This could save lives by providing immediate medical guidance, preserve invaluable traditional healing knowledge, and bridge the gap between remote tribal communities and modern healthcare systems. It would improve maternal and child health outcomes while respecting cultural healing practices.





Problem 8: Education & Skill Development Portal

What's the Problem?

- Limited access to quality education beyond primary schooling in tribal areas
- High dropout rates due to lack of relevant, culturally appropriate educational content
- Adult literacy programs are insufficient and don't consider local languages and customs
- Traditional knowledge and tribal languages are not being systematically preserved or taught
- Lack of awareness about government education schemes, scholarships, and training programs
- Limited opportunities for skill development that could improve employment and income
- Digital literacy gap prevents access to online learning and government services
- Youth migration to cities due to lack of local educational and employment opportunities

What You Need to Design:

- Comprehensive educational platform (mobile app + website) with offline content delivery
- Multi-level learning modules from basic literacy to advanced skill development
- Voice-based learning system for non-literate adults and children
- Traditional knowledge preservation modules (stories, songs, crafts, customs)
- Tribal language learning and documentation tools
- Government scheme awareness with scholarship and training opportunity alerts
- Skill-based learning tracks (handicrafts, organic farming, small business, digital literacy)
- Progress tracking and certification system integrated with government programs
- Community learning groups and peer-to-peer knowledge sharing
- Audio-visual content in Telugu with cultural context and local examples
- Gamified learning experiences to improve engagement and retention

Real-World Impact:

This could reduce educational inequality, preserve tribal cultural heritage, and create local employment opportunities. It would help youth stay in their communities while gaining valuable skills, ultimately strengthening tribal identity and economic development.





Problem 9: Legal Aid & Rights Awareness System

What's the Problem?

- Tribal communities often face land disputes, exploitation, and rights violations due to lack of legal awareness
- Limited understanding of PESA (Panchayat Extension to Scheduled Areas) Act and Forest Rights Act
- Difficulty in accessing legal aid and navigating complex legal procedures
- Important documents (land records, identity papers, certificates) are often lost or damaged
- Exploitation by middlemen, contractors, and government officials due to legal illiteracy
- Language barriers in legal proceedings and documentation
- Long distances to courts and legal aid centers make justice inaccessible
- Lack of awareness about grievance redressal mechanisms and ombudsman services

What You Need to Design:

- Legal rights education platform (mobile app + website) with simplified legal info
- Document digitization and secure cloud storage system for important papers
- Legal aid directory with contact details of lawyers, legal aid clinics, and NGOs
- Step-by-step guides for common legal procedures (land registration, grievance filing, etc.)
- PESA Act and Forest Rights Act simplified explanations with real-world examples
- Grievance filing assistance with template generation and tracking system
- Legal consultation booking system with pro-bono lawyer network
- Rights awareness quiz modules with scenarios relevant to tribal communities
- Audio-based legal education content in Telugu for non-literate users
- Case study database of successful legal interventions in tribal areas
- Integration with government grievance portals and legal aid schemes

Real-World Impact:

This could protect tribal communities from legal exploitation, help them assert their constitutional rights, and provide access to justice. It would empower them to handle land disputes, access government schemes, and navigate legal systems independently while preserving their traditional governance structures.





Key Requirements for All Solutions:

Design Requirements:

- **Platform:** Both mobile app and website versions
- **Language:** Multi-lingual with Telugu primary, English for technical terms
- **Accessibility:** Voice-enabled (speech-to-text and text-to-speech) for illiterate users
- **Connectivity:** Offline functionality with cloud sync when internet available
- **Integration:** Future platform integration capability under unified system
- **User Interface:** Simple, intuitive design suitable for first-time digital users
- **Data Security:** Secure local storage and encrypted cloud synchronization
- **Scalability:** Expandable to other languages and regions

Success Criteria:

- **Accessible:** Usable by non-literate tribal community members
- **Affordable:** Low-cost or free solutions with minimal data usage
- **Culturally Appropriate:** Respects traditional knowledge and practices
- **Practical:** Easy to use without extensive training
- **Reliable:** Functions effectively with intermittent internet connectivity
- **Sustainable:** Long-term viability and maintainability
- **Impactful:** Measurable improvement in financial/agricultural outcomes

Why These Problems Matter:

All solutions focus on empowering tribal communities in Alluri Sitarama Raju Manyam district and similar regions by providing them with digital tools that respect their traditional knowledge while introducing beneficial modern practices. They address the digital divide, financial inclusion, agricultural development, healthcare access, education, and legal empowerment challenges specific to tribal areas, ultimately aiming to improve livelihoods and preserve cultural heritage while ensuring comprehensive community development.





Difficulty Scores (Scale: 1-10, where 10 is most difficult)

Problem 1: Interest Calculator with Loan Tracker - Score: 6/10

- Moderate complexity with well-defined mathematical calculations
- Voice integration adds complexity but libraries exist
- Offline sync is manageable for financial data
- Clear business logic and user flows

Problem 2: Digital Household Passbook - Score: 5/10

- Straightforward CRUD operations and data visualization
- Voice features are the main technical challenge
- Relatively simple data models and user interactions
- Good entry-level problem for teams with basic app development skills

Problem 3: Community/Village Bank - SHG Management Tool - Score: 8/10

- Complex multi-user system with role-based access
- Intricate financial calculations and audit trails
- Government scheme integration requires external API knowledge
- Sophisticated user management and security requirements

Problem 4: Market Prices Repository with Advisory System - Score: 7/10

- Requires real-time data integration and API development
- Complex recommendation algorithms for optimal selling decisions
- Geographic calculations and route optimization
- Data freshness and reliability challenges

Problem 5: Integrated Crop/Farm Management System - Score: 9/10

- Most comprehensive solution with multiple interconnected modules
- Weather API integration and seasonal planning algorithms
- Complex data relationships between crops, seasons, and farming practices
- Requires agricultural domain expertise alongside technical skills

Problem 6: Organic Advisory System with Photo Recognition - Score: 10/10





- Highest technical complexity due to AI/ML image recognition
- Requires training datasets for crop disease identification
- Integration of traditional knowledge databases with modern recommendations
- Weather integration adds another layer of complexity
- May require cloud-based AI services for image processing

Problem 7: Healthcare Access & Telemedicine Platform - Score: 8/10

- Complex telemedicine integration with video consultation
- AI-powered symptom checking requires medical knowledge base
- Emergency systems need GPS and real-time coordination
- Integration with healthcare facilities and government health schemes

Problem 8: Education & Skill Development Portal - Score: 7/10

- Multi-level content management system
- Progress tracking and certification integration
- Cultural content preservation requires specialized modules
- Community learning features add complexity

Problem 9: Legal Aid & Rights Awareness System - Score: 6/10

- Document management and secure storage
- Legal knowledge base requires careful curation
- Integration with government grievance systems
- Moderate complexity with clear functional requirements

Rationale:

- Scores 1-4: Basic to intermediate programming skills
- Scores 5-7: Strong programming skills with some specialized knowledge
- Scores 8-10: Advanced technical skills with domain expertise and/or AI/ML knowledge

Overall Scoring Framework

Total Points: 100

- Technical Implementation (40 points)
- Problem Understanding & Solution Design (25 points)
- User Experience & Accessibility (20 points)
- Innovation & Impact Potential (15 points)

