Outsourcing Software Development
A 2002 Summation

July 11, 2002

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1 Offshore Outsourcing comes of age

The US market for outsourcing information technology services is about $100 billion.Companies of all sizes and in all industries are increasingly outsourcing software work to offshore vendors. *India is emerging as a key destination for these companies to outsource their software development needs.*

Though managements have a fair understanding of the risks and challenges that come from offshore outsourcing, they are very interested in streamlining their present IT organizations, as well as reducing the costs involved.

Picture this: While you're busily trying to manage yet another application development project that's six months behind schedule, the marketing VP of an Indian outsourcing firm is meeting with your senior management upstairs in the executive conference room.

" How many development people do you have in your organization?" the marketing VP asks. " Three hundred? Fine, no problem. We'll dedicate 300 of our people in India to work on your projects. We'll replicate your hardware, your operating system, your database, and network environment, and whatever procedures and methodologies you're using. You can be confident that we'll do all of this properly, because we're ISO-9000 certified, and we just got an SEI level-4 assessment."

"So what you're telling me," the executive says, a smile spreading from one ear to the other, " is that I don't have to deal with the visa problems and headaches of having a bunch of programmers camping out here at my own facility - and I don't have to try to achieve the cost savings on a project-by-project basis. I can move the entire software development organization overseas, and cut my costs in half. Is that what you're telling me?"

"Absolutely," says the marketing VP. "Trust me!" [1]

2 Why Outsource At All?

If your software development projects tend to fall behind schedule and over budget, then consider sending the whole project overseas, to a vendor in India where the project will be delivered at a fraction of what it would cost in North America.

Offshore outsourcing, to India, gives you a range of benefits.

- Outsourcing saves money
- Helps cut time to market
- Capital expenditures can be avoided
- Gives access to a pool of highly educated people with specialized skills, rather than having to train in-house people or hire new employees.

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[1]Ed Yourdon, from Offshore Outsourcing: The Benefits and Risks

3 Why India for outsourcing ?

- Highly Educated and Available Manpower

  India has some of the finest technical and management institutions producing a large pool of highly educated technical manpower with degrees in computer science and software engineering.

- India is a Democracy

  In contrast to China or some of the other East European or Southeast Asian countries, India offers the benefits of a democratic set-up, which means that when you do business with India, you are sure of your rights and how to protect them.

- Financial stability

  India does not risk downgrades and defaults on its loan repayments and hence currency devaluations and wild fluctuations will not upset the project's financial budget.

- English speaking Work-Force

  The widespread use of English, in business communications is a barrier for anyone whose native language is not English. "One of the top three reasons for choosing a software team is spoken-language abilities (the other two are specific operating-language skills and telecommunications connections)".[2] India enjoys the benefits of having a predominantly English speaking work-force.

- India has a strong cyber law and Intellectual Property protection regime in place.

- An increasingly large number of fortune 500 clients are increasing their outsourcing to India.

- Political stability like the U.S.

  Unstable governments and political instability lead to an unpredictable business environment. India offers a stable democratically elected government and great stability on the political front.

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[2]Bellinger 1996

Important factors for outsourcing

Based on an issue of Ed Yourdon's newsletter "Application Development Strategies", and a report on software benchmarking conducted by Ed Yourdon and Dr. Howard Rubin, editor of IT Metrics Strategies, factors that are important to outsourcing software development are listed below.

Sr.No.	Critical factors	Non-Critical factors
01	Familiarity with the client's language	Location convenient to customer's preference for establishing an offshore development center
02	Telecommunication infrastructure	Tax consequences
03	Large pool of educated manpower	ISO 9000 certification
04	Price	High rating on the SEI process maturity evaluation
05	Rapid start	Prior experience with the customer's organization
06	Credentials	Familiarity with the client's network environment
07		Ability to adapt quickly to new, unfamiliar technology

4 Infofin as the preferred outsourcing vendor

Infotech Financials (Infofin) is a provider of financial engineering expertise to the securities industry,exchanges,fund management industry and other capital market intermediaries. We offer a unique combination of industry experience, state-of-the-art technical and analytical skills and tools needed to provide risk analysis, valuation and hedging solutions on the most complex problems. Infofin also has the necessary knowledge to implement business transformation projects for mid-sized companies to large enterprises.

4.1 How does Infofin score on the Critical Factors?

- **Familiarity with the client's language**

  All employees and partners of Infofin are comfortable with communicating in English, proving to be one of Infofin's key advantages.

- **Telecommunication infrastructure**

  At Infofin we have always laid great stress on building a solid telecommunications infrastructure, comprising of the following: a 128kbps leased line, a backup DSL line and ISDN modem bank. Besides, we have invested heavily in teleconferencing facilities which help communication between the development team in India and the client.

- **Large pool of manpower**

  At our India development center, there is a large pool of highly educated technical and domain experts who are ready to take on a project and get down to the drawing board immediately. Since we specialize in projects related to finance, our staff is geared to take on virtually any finance project and deliver on the same.

- **Price**

  At Infofin we focus on providing the maximum value for money to the customer.

  - Development of the project takes place at our modern development center in India, where the cost of manpower is a fraction of the rates prevailing in the U.S.

  - Since the project is done in India, we prefer to have only a few persons from our side at the client's location, thereby bringing down costs considerably.

  - Using teleconferencing facilities, and PC to phone communications we avoid excessive travelling to the U.S. and peg communication costs down to acceptable levels.

- **Rapid Start**

  If you are looking at time to market as an advantage, start by handing out the whole project, from design to delivery to Infofin. Once the project is handed over to Infofin, a team is formed; comprising of the project manager, project leader, domain experts, testers and programmers to develop and deliver on the promise of good quality software on time, on schedule.

- **Project Management at Infofin**

  Experience proves that a software project executed offshore needs tighter control mechanisms to ensure its success. At Infofin we have the maximum controls in place to deliver quality software. We communicate with clients regularly, have a project progress website for the client, the latest project management and version controlling tools, and a web-based issue tracking software.

- **Credentials**

  - Profit making company

  - Focussed domain expertise and service offerings: Has concentrated on niche market segments, index funds, derivatives and risk management. Sole software vendor offering software to manage index fund operations in India.

  - Cheaper yet robust technology solutions: Infotech Financials has developed applications on Linux and open source technology which give the clients the advantage of using robust scalable technology at economical prices.

  For the last three years, Infofin has successfully developed and deployed software applications from its modern facility in Mumbai, India for U.S. based clients, leveraging the offshore development model successfully. To further reduce costs for our clients, even support and maintenance can be provided out of the India center.

5 Partnering with Infofin & CSI

In our fast paced and ever changing business environment, all organizations need to evolve to address the challenges and opportunities before them. Outsourcing your systems, processes and application development can help you provide greater value to your stakeholders by becoming more responsive to costs, providing better value to customers and shareholders, enhancing efficiency and increasing integration across systems and divisions.
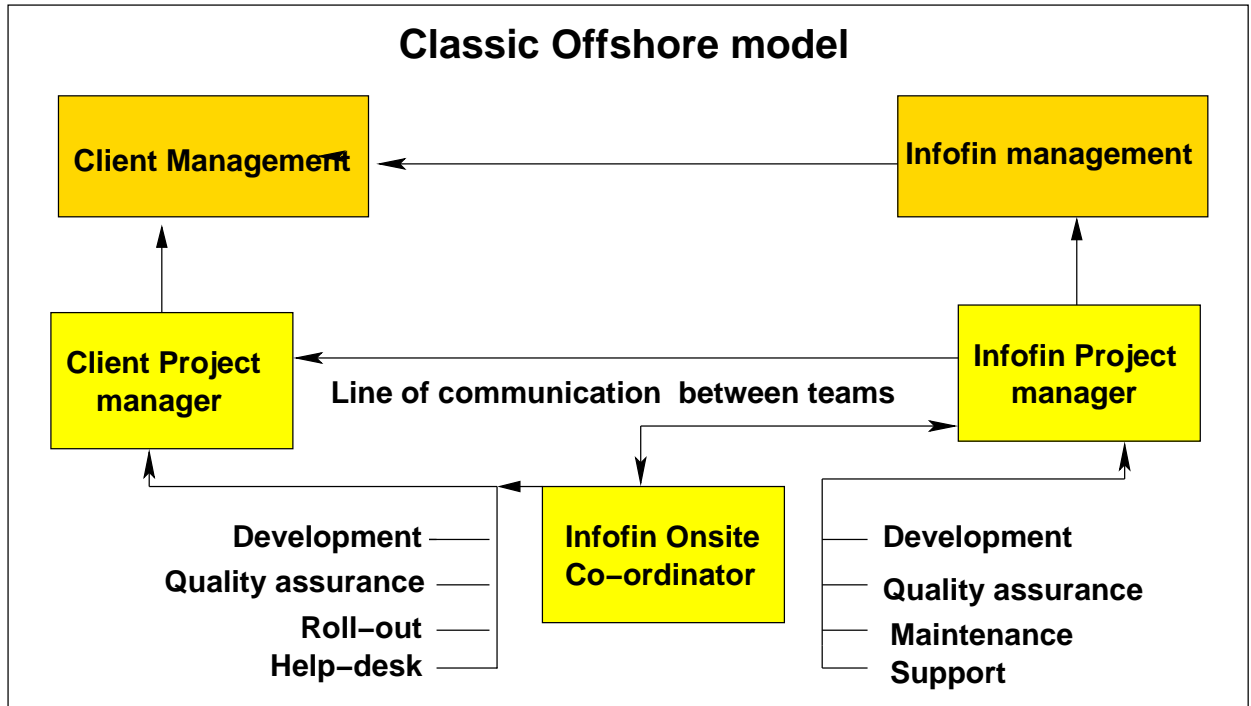
Finding and engaging the right partner will help you maximize the business value of your efforts, while reducing the risk, time-to-market and cost of delivering the effort. An experienced partner will support you through the strategy, tactics, execution, deployment, and support phases of your transformation initiative and guide you through the challenges of picking the right projects, devising the optimal strategies to implement those projects and ensuring that all factors needed to achieve success are covered.

We offer a unique set of services to handle all phases of a transformation effort. Our offerings provide you with a roadmap and services to transform your data, functioning, and processes to support your business objectives. We have achieved our enviable record of near 100% project success through a combination of domain and technical expertise, experienced staff, a focus on our core values and the use of state-of-the-art technology.

In conjunction with our U.S. based holding company, Compusystems,Inc, we have removed the political risk attached to offshore cost savings and rapid deployment of projects. *Essentially, we have combined the normal business disruption insurance safeguards, with an undertaking to guarantee to complete any fixed-bid deliverables at no additional cost to our partner-clients.*

6 Delivering Quality Software

Infotech Financials (Infofin) undertakes software development at its modern development center in India, and has executed a number of projects for its clients in the United States, India, Europe and the Middle East. The core competence of Infofin lies in delivering quality software solutions at reasonable costs owing to Infofin fully leveraging the advantages of executing development of software at its Mumbai facility in India.

Classic Offshore model

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Client Management  ←————————————  Infofin management
       ↑                                    ↑
       |                                    |
Client Project  ←——————————————————  Infofin Project
   manager                                manager
           Line of communication  between teams
       ↑                    ↓                  ↑
Development ——              |              —— Development
Quality assurance ——  Infofin Onsite      —— Quality assurance
Roll–out ——           Co–ordinator        —— Maintenance
Help–desk ——                              —— Support
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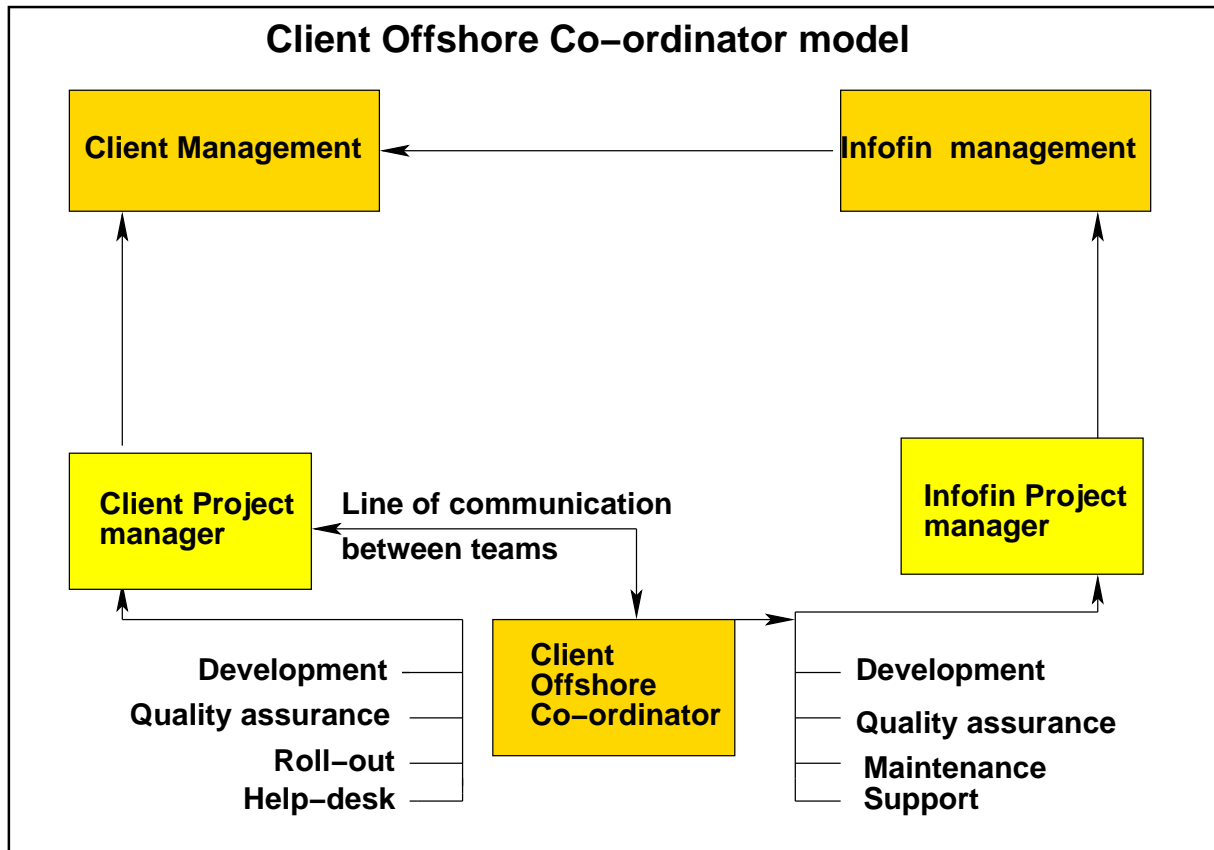
Advantages of offshore development

Some of the advantages of offshore development are listed below:

- Project costs come down considerably.

- Fewer time and cost over-runs on project deadlines and budgets.

- Faster and more flexible deployment of resources.

- Shorter learning curves, owing to high levels of expertise in technology and domain.

- A faster time-to-market for the client.

7 Offshore Development Center (ODC)

Client Offshore Co–ordinator model

Client Management ← Infofin management

Client Project manager

Infofin Project manager

Line of communication between teams

Client Offshore Co–ordinator

Development
Quality assurance
Roll–out
Help–desk

Development
Quality assurance
Maintenance
Support

In view of the benefits of off-shore development, Infofin prefers to set-up dedicated off-shore development centers for clients and their specific projects. We have state-of-the-art infrastructure, including advanced computing and communication equipment at our Mumbai development center and use tested methodologies to manage and execute projects on time with significant cost benefits that are associated with offshore development.

Advantages of ODC

- Clients focus on their core business while outsourcing the non-core activities.

- Specialised pool of technology and domain resources, dedicated to working exclusively for the Client.

- Combination of teams onsite and in India can provide faster deliveries.

- Faster recruitment, training and deployment of resources.

- Comprehensive Security Policy to protect infrastructure and client's Intellectual Property Rights.

8 Typical Contracting Models

Reducing risks in offshore development

- The scope of work needs to be clearly defined and phased-out for development, so that projects do not face time and cost over-runs.

- A good communications infrastructure is crucial, such as good Onsite Coordinator, connectivity to the Internet, email, etc., between the client's site and the outsourced location.

9 Software Development Methodology

1. **Identifying and appointing key persons**

   Our cooperation with clients is based on a "communication channel" approach. This means that the client appoints someone who will be our single communication point for all official project-related issues and we assign a project manager who will be the only person for all official interactions between Infofin and the client.

   Key people

   - Infofin's On-site Co-ordinator and Project Manager
   - Client's Project Coordinator/Manager

   Role of Onsite Coordinator

   - Understand Client's Business and processes
   - Provide effective Communication
   - Update Client on Project Progress
   - Handling deliveries

2. **Project Initialization**

   This stage starts by studying the initial system requirements provided by the client. Jointly, with the client's IT staff, Infofin's project manager conducts extensive sessions for identifying requirements and eliminating possible misunderstandings. Future users of the system are also interviewed.

   The project manager and the client's IT-staff define Configuration Management issues, approaches to sharing/delivery of code, sharing information about defects, managing changes and mapping them to specifications, etc.

   Deliverables

   - Configuration Management Document
   - Project vision and goals

3. **Defining requirements and deliverables**

The objective at this stage is to identify system requirements and their priorities in order to make a high-level design, system prototype and to plan stages of development.

If applicable, requirements for user documentation and/or on-line manuals are identified.

Stages of project development with deliverables corresponding to every stage are defined.

We develop the project requirements document, outlining functionality of the system and non-functional requirements (e.g. performance).

In parallel, we form a project team with identified skills. Business and technical project knowledge is transferred to the development and test teams.

Deliverables

- System requirements
- User requirements documentation
- Stage Plan document
- Project Requirements document

4. **Design and planning**

This stage starts with the high-level system design, i.e. conceptual architecture of the system. The next step is to create the Functional Specifications Document describing possible system configurations, major algorithms, internal and external interfaces, etc. In case of an interactive system, we build an UI Prototype. The test team leader is responsible for test planning, i.e. creating a list of test cases. We develop the structure of user documentation. Detailed planning of development is finalized at this stage.

Deliverables

- Project plan - defining deliverables, milestones and responsibilities.
- High-Level Design Document
- Functional Specification Document
- HTML UI prototype
- Development and test plans
- Master Test Plan document

5. **Confirmation of the project**

Based on the acceptance of the HTML prototype, architecture and choice of technology, the development team under a Project manager will draft a plan for the execution of the project giving time and cost estimates.

Deliverables

- Time and cost estimates.

6. **Development and Quality Assurance**

The development stage includes low-level system design after which routine coding and Quality Assurance procedures can begin. In parallel, dedicated technical writers develop user documentation.

- Ensuring Quality

  Delivering quality consistently is of utmost importance to Infofin. Quality control activities, reviews, inspections, and tests are integral to our development processes. We have employed stringent quality assurance processes and methodologies based on the recommendations of Rational Unified Process and CMM Level 3 specifications. In line with the quality requirements, we practice standard software development methodologies and practices which involve principles of Function Point Analysis, Design Patterns and UML.

- Incremental development

  Development of the application takes place in progressive phases or increments. Incremental delivery permits experimentation of complex solutions and modifications through hands-on exposure to the delivered component.

At this stage regular contact is maintained with the Client Project manager(CPM).

- The CPM is kept updated of the project status through a project website which shows him the latest schedule and status of the project.

- Regular voice chats are established to update and confirm requirements.

- A web-based bug tracking system is accessible to the CPM, to enter and track system deficiencies.

- A robust version control system like CVS is in place to manage issues arising out of multiple versions.

Deliverables

- Deliveries with levels of functionality corresponding to the Stage Plan Document

- User Documentation

7. **Commissioning**

Commissioning involves the installation of the final system on the client's infrastructure, field testing by the client's personnel and processing feedback from the client's field testers.

Deliverable

- Final system delivery

- Feedback from the client's field testers

8. **On-going maintenance**

We implement additional features requested by the client and fix defects found during the warranty in line with the maintenance contract.
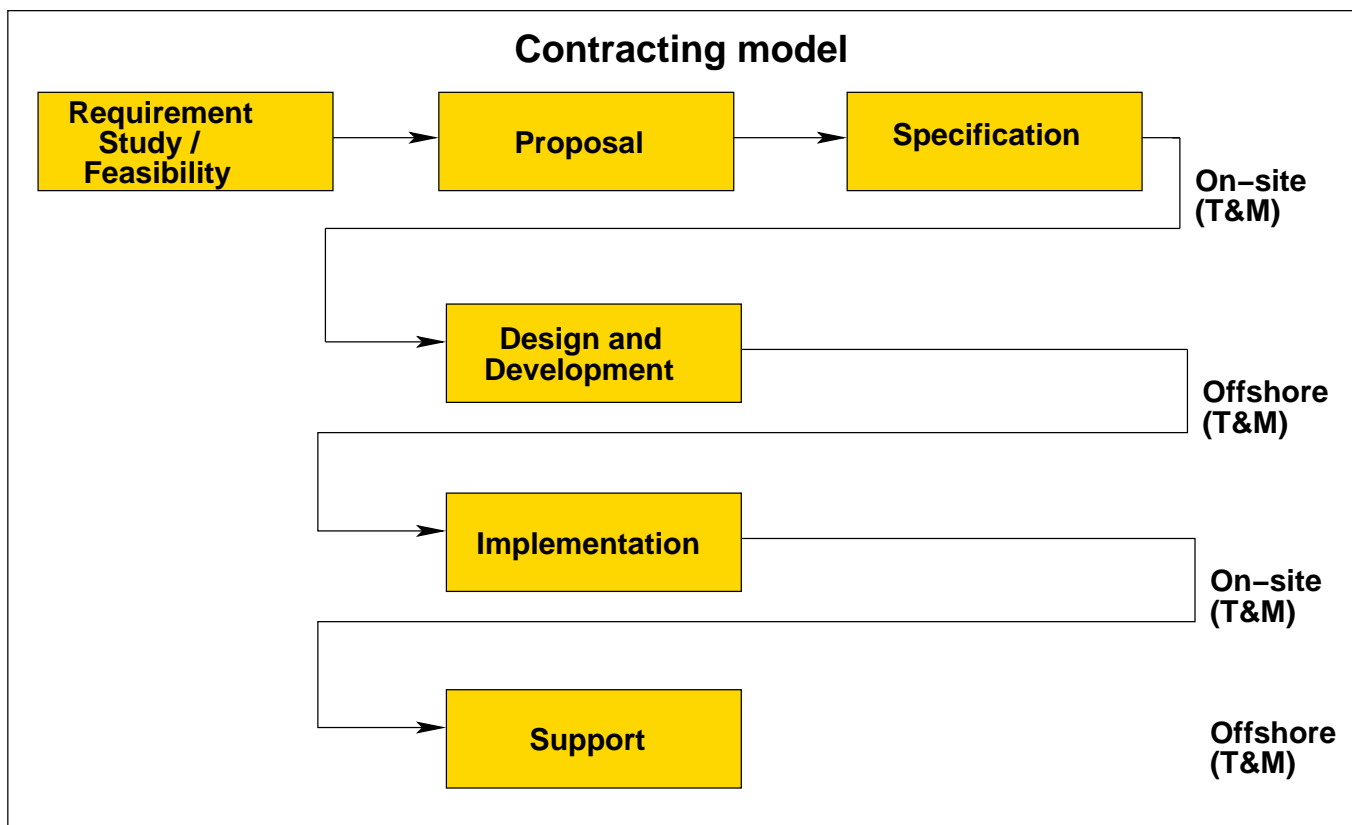
Deliverable

- Maintenance releases and patches

Guarantee of the Approach

- On-time completion of the project.

- Delivery of a high-quality system meeting the exact business requirements

- Development of a flexible and easy to use system.

- CompuSystems, Inc. has removed any consideration of political risk attached to these offshore cost-savings and rapid deployment of projects by combining normal business disruption insurance safeguards with a guarantee that any fixed-price deliverables by Infofin will be completed by CSI at no additional cost to our partner-clients.

10   Outsourcing Models

In the new economy, we realize that customers are increasingly demanding the flexibility that best serves their unique business requirements. We also provide the option of selecting a combination of business models to suit various phases of a project cycle.

Contracting model

Requirement Study / Feasibility	→	Proposal	→	Specification	On−site (T&M)
Design and Development	Offshore (T&M)
Implementation	On−site (T&M)
Support	Offshore (T&M)

- **Fixed Time/Fixed Price**

  Our fixed time, fixed price model offers customers a low-risk option and can be employed when the scope and specifications of the project are reasonably clear. This model guarantees on-time, on-budget delivery of projects. Deliverables, Costs and Time-lines are clearly defined in the Fixed Time/Fixed Price model. In fixed time, fixed-price engagements, Infofin follows a phased approach that includes scoping, development, implementation and business support. Combining the fixed time, fixed price model with our solutions center, we can offer customers a tremendous advantage on the cost front.

- **Time and Materials**

  In this business model, Infofin forms project teams with the required team members, project managers, equipment and infrastructure based on project requirements. Customers pay a charge per hour based on the size and composition of the team. This model offers the flexibility to balance team size and project workloads. Most of our services are delivered using this business model. Infofin could bid for partial phases of a project on a fixed time, fixed price basis and the remaining parts on a time and material basis.

- **Revenue/Risk Share**

  We have endeavoured to partner with our Clients, by offering unique risk-reward models for project delivery. Revenue/Risk Share models are popular amongst emerging businesses or technology companies, wherein Infofin can invest and share the development costs in return for jointly owning the Intellectual Property Rights (IPR) and sharing revenue/licensing fees. The risk and reward model is typically used during software product/subsystem development.