Analisis Sistem

Analisis & Perancangan Sistem Informasi
DMH2F3

The World of the Information System Analyst

- Analysts must have the technical skills to understand the organization's existing technical environment, the new system's technology foundation, and the way in which both can be fit into an integrated technical solution. Business skills are required to understand how IT can be applied to business situations and to ensure that the IT delivers real business value. Analysts are continuous problem solvers at both the project and the organizational level, and they put their analytical skills to the test regularly. Often, analysts need to communicate effectively, one-on-one with users and business managers (who often have little experience with technology) and with programmers (who often have more technical expertise than the analyst does). They must be able to give presentations to large and small groups and to write reports. Not only do they need to have strong interpersonal abilities, but they also need to manage people with whom they work, and they must manage the pressure and risks associated with unclear situations.
  Finally, analysts must deal fairly, honestly, and ethically with other project team members, managers, and system users. Analysts often deal with confidential information or information that, if shared with others, could cause harm (e.g., dissent among employees); it is important for analysts to maintain confidence and trust with all people.

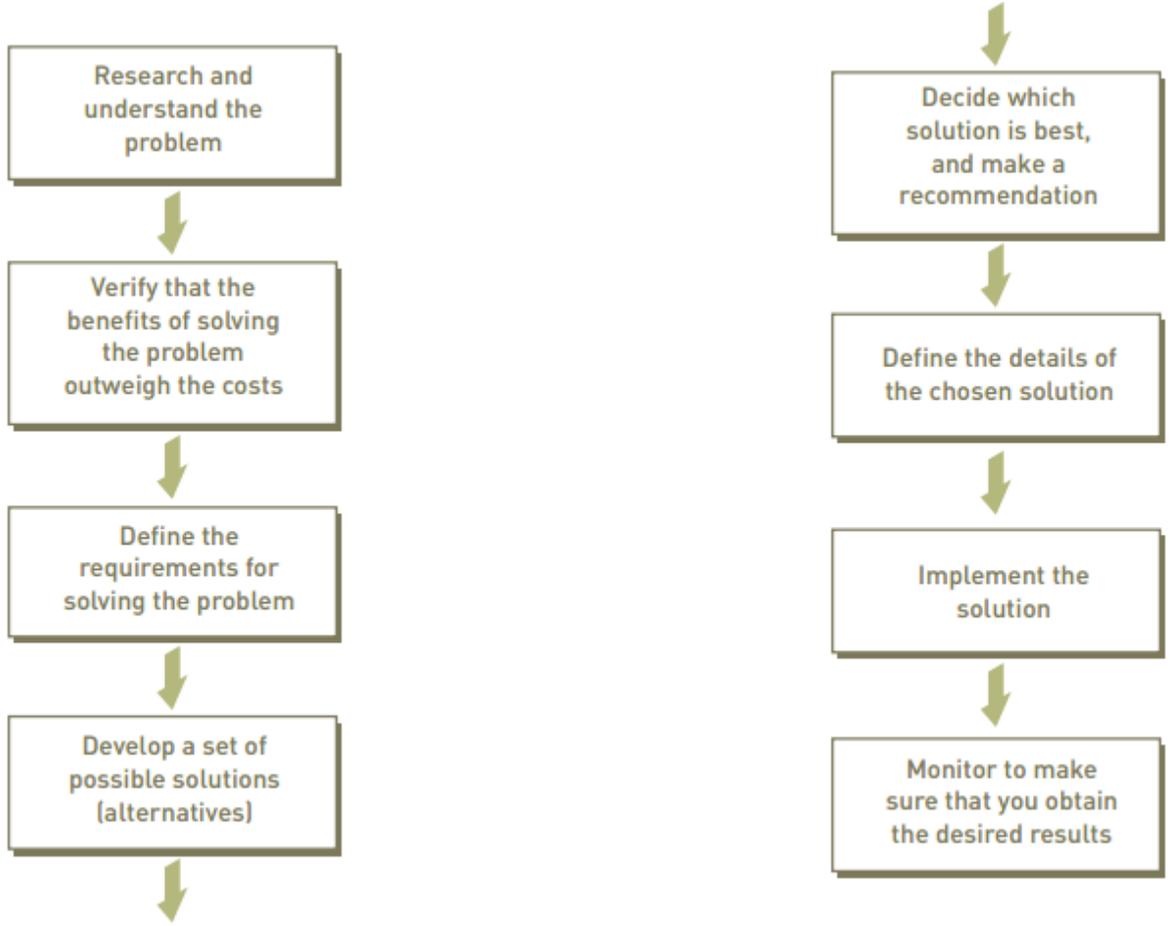
- The *systems analyst* role focuses on the IS issues surrounding the system.
  This person develops ideas and suggestions for ways that IT can support and
  improve business processes, helps design new business processes supported by IT,
  designs the new information system, and ensures that all IS standards are maintained. The systems analyst will have significant training and experience in analysis
  and design and in programming

- The *business analyst* role focuses on the business issues surrounding the system. This person helps to identify the business value that the system will create,
develops ideas for improving the business processes, and helps design new business
processes and policies. The business analyst will have business training and experience, plus knowledge of analysis and design.
The *requirements analyst* role focuses on eliciting the requirements from the
stakeholders associated with the new system. As more organizations recognize the
critical role that complete and accurate requirements play in the ultimate success of
the system, this specialty has gradually evolved. Requirements analysts understand
the business well, are excellent communicators, and are highly skilled in an array
of requirements elicitation techniques (discussed in Chapter 3).
The *infrastructure analyst* role focuses on technical issues surrounding the ways
the system will interact with the organization's technical infrastructure (hardware,
software, networks, and databases). This person ensures that the new information
system conforms to organizational standards and helps to identify infrastructure
changes that will be needed to support the system. The infrastructure analyst will
have significant training and experience in networking, database administration,
and various hardware and software products. Over time, an experienced infrastructure analyst may assume the role of *software architect*, who takes a holistic view of
the organization's entire IT environment and guides application design decisions
within that context.
The *change management analyst* role focuses on the people and management
issues surrounding the system installation. This person ensures that adequate documentation and support are available to users, provides user training on the new
system, and develops strategies to overcome resistance to change. The change management analyst will have significant training and experience in organizational
behavior and specific expertise in change management.

THE ANALYST AS A BUSINESS PROBLEM SOLVER

- kinds of problems does an analyst typically solve?
  • Customers want to order products any time of the day or night. So, the problem is how to process those orders around the clock without adding to the selling cost.
  • Production needs to plan very carefully the amount of each type of product to produce each week. So, the problem is how to estimate the dozens of parameters that affect production and then allow planners to explore different scenarios before committing to a specific plan.
  • Suppliers want to minimize their inventory holding costs by shipping parts used in the manufacturing process in smaller daily batches. So, the problem is how to order in smaller lots and accept daily shipments to take advantage of supplier discounts.
  • Marketing wants to anticipate customer needs better by tracking purchasing patterns and buyer trends. So, the problem is how to collect and analyze information on customer behavior that marketing can put to use.
  • Management continually wants to know the current financial picture of the company, including profit and loss, cash flow, and stock market forecasts. So, the problem is how to collect, analyze, and present all of the financial information management wants.
  • Employees demand more flexibility in their benefits programs, and management wants to build loyalty and morale. So, the problem is how to process transactions for flexible health plans, wellness programs, employee investment options, retirement accounts, and other benefit programs offered to employees

the analyst's approach to problem solving



SYSTEMS THAT SOLVE BUSINESS PROBLEMS

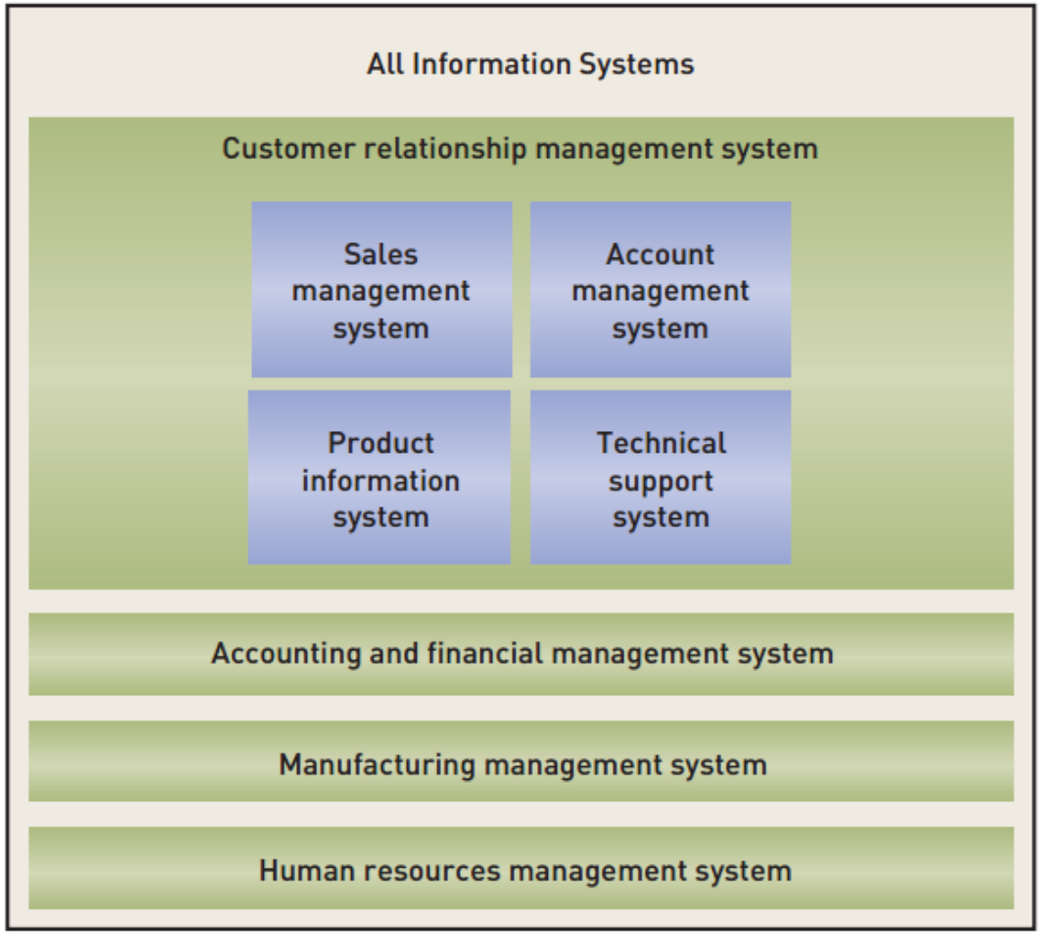
- We described the systems analyst as a business problem solver. We said that the solution to the problem is usually an information system. Before we talk about how you learn to be a systems analyst, let's quickly review some information systems concepts.

- A **system** is a collection of interrelated components that function together to achieve some outcome.
- **information system**
  a collection of interrelated components that collect, process, store, and provide as output the information needed to complete business tasks

- A payroll system, for example, collects information on employees and their work, processes and stores that information, and then produces paychecks and payroll reports (among other things) for the organization. A sales management system collects information about customers, sales, products, and inventory levels. It enables customers and sales personnel to create and modify sales orders, select payment methods, and output sales information for tasks such as generating financial statements, computing bonuses, and scheduling production.

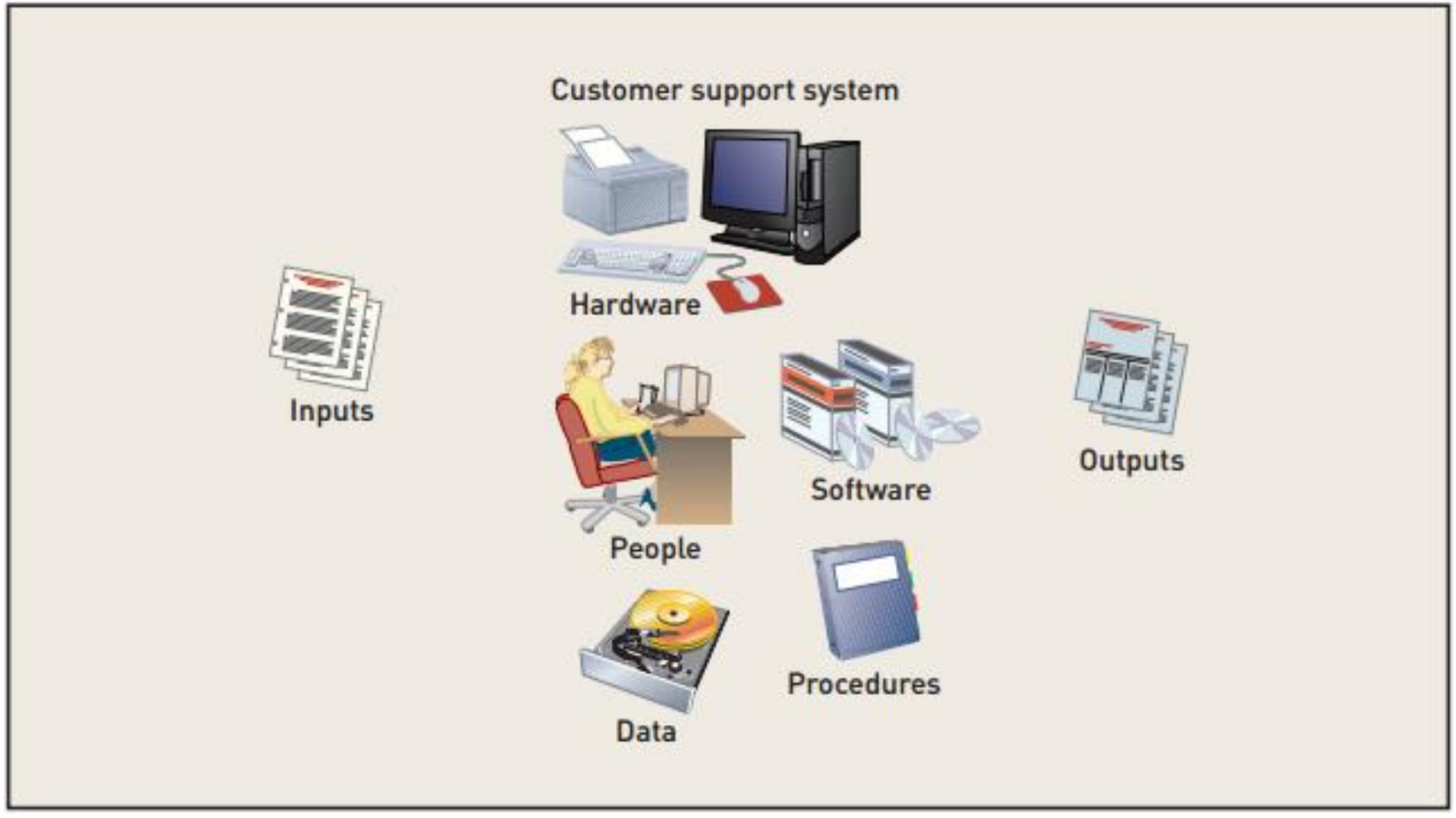
- What are the interrelated components of an information system? You can think about components in several ways. Any system can have subsystems. A **subsystem** is a system that is part of another system, so subsystems might be one way to think about the components of a system

Information systems and subsystems



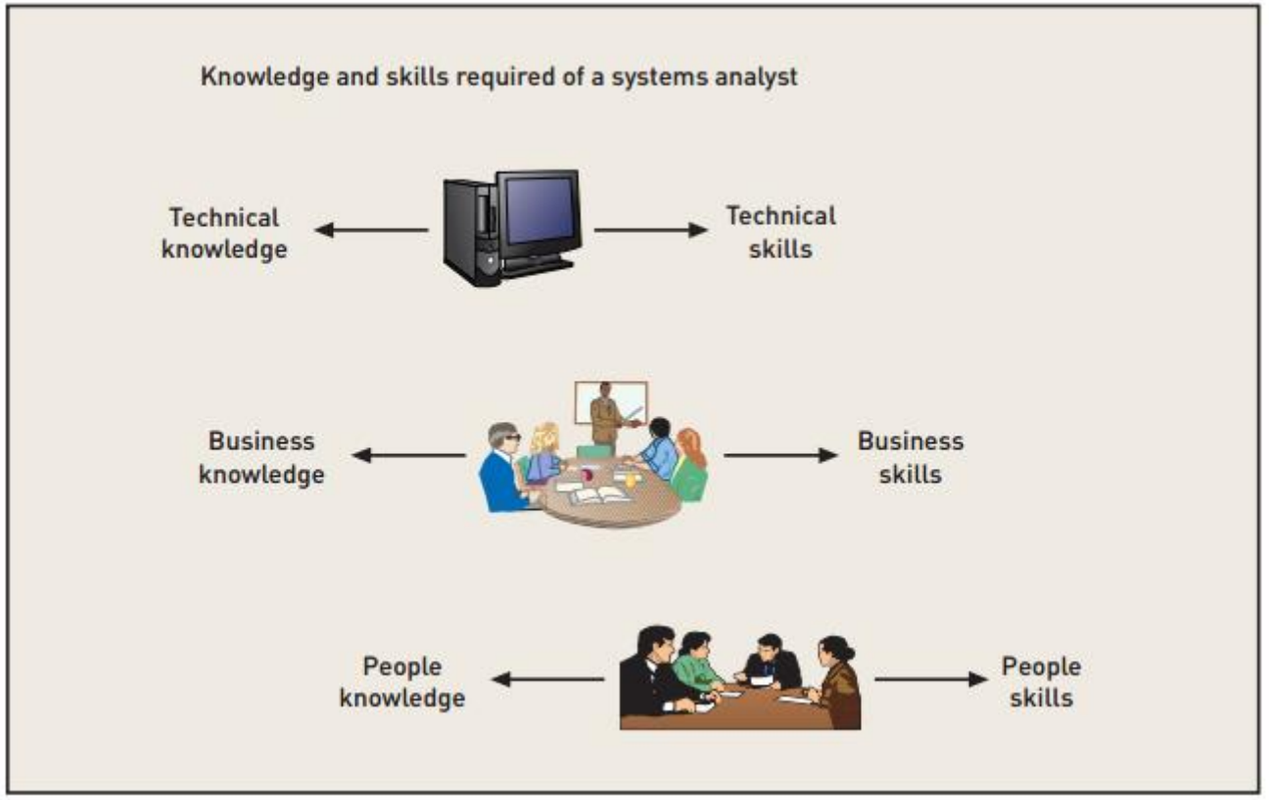
- Another way to think about the components of a system is to list the parts that interact.
  For example, an information system includes hardware, software, inputs, outputs, data, people, and procedures. This view is also very useful to the analyst. These interrelated components function together in a system, as shown

Information systems and component parts



REQUIRED SKILLS OF THE SYSTEMS ANALYST

- Systems analysts (or any professionals doing systems analysis and design work) need a great variety of special skills.


Knowledge and skills required of a systems analyst
Technical knowledge
Technical skills
Business knowledge
Business skills
People knowledge
People skills

TECHNICAL KNOWLEDGE AND SKILLS

- a systems analyst should understand the fundamentals about the following:
  - Computers and how they work
  - File, database, and storage hardware and software
  - Input and output hardware and software
  - Computer networks and protocols
  - Programming languages, operating systems, and utilities
  - Communication and collaboration technology such as digital telephones, videoconferencing, and Web-based document management systems

- A systems analyst also needs to know a lot about tools and techniques for developing systems. **Tools** are software products that are used to develop analysis and design specifications and completed system components. Some tools used in system development include the following:

Tools used in system development

- Software packages such as Intuit QuickBooks, Microsoft Access, and Adobe Dreamweaver that can be used to implement small systems or develop subsystems
  • Integrated development environments (IDEs) such as Oracle JDeveloper and Microsoft Visual Studio that support program development, database design, software testing, and system deployment
  • Computer-aided visual modeling tools, such as Rational XDE Modeler, Visible Analyst, and Embarcadero Describe, that help analysts create, store, modify, and manage system specifications and sometimes generate programs, databases, Web-based interfaces, and other software components
  • Automated testing tools, configuration management tools, software library management tools, documentation support tools, project management tools, and so on

Techniques

- **Techniques** are strategies for completing specific system development activities.

some examples of techniques

- • Project planning techniques
  - Cost/benefit analysis techniques
  - Interviewing techniques
  - Requirements modeling techniques
  - Architectural design techniques
  - Network configuration techniques
  - Database design techniques

BUSINESS KNOWLEDGE AND SKILLS

- What business functions do organizations perform?
  - How are organizations structured?
  - How are organizations managed?
  - What type of work goes on in organizations (finance, manufacturing, marketing, customer service, and so on)?
    What the specific organization does
  - What makes it successful
  - What its strategies and plans are
  - What its traditions and values are

Best Practices

- Be sure you understand the organization, its culture, its mission, and its objectives before jumping to conclusions about system solutions.

PEOPLE KNOWLEDGE AND SKILLS

- Interpersonal skills

Best Practices

- Analysts typically devote several weeks per year to training and continuing education. An analyst should devote time to developing so-called "**soft skills**" such as interviewing, team management, and leadership, and should develop **hard skills** such as database design, programming, and telecommunications.

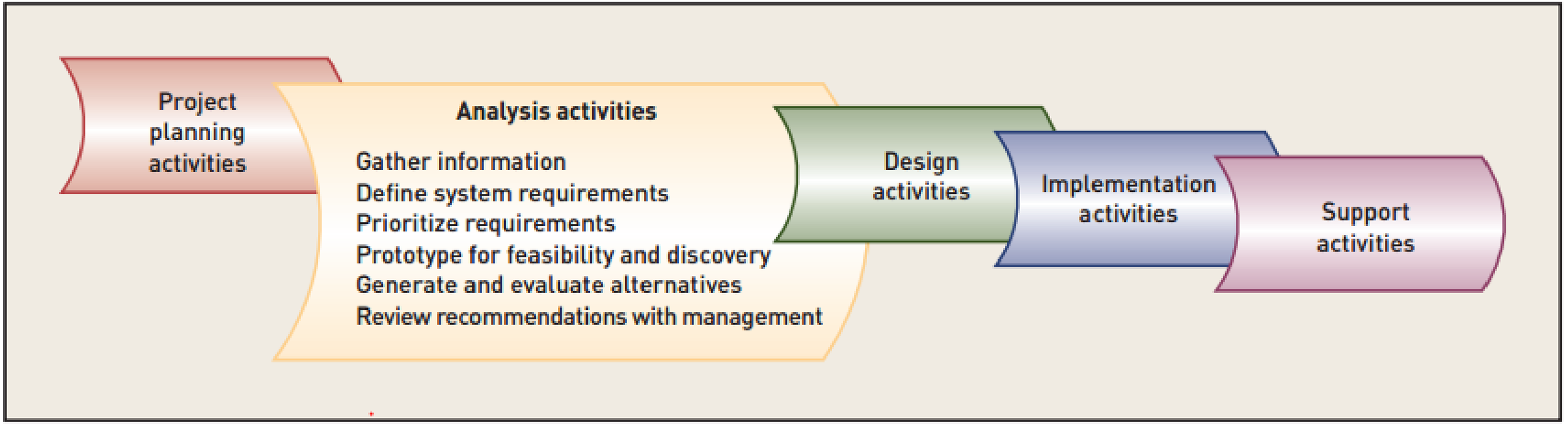
ANALYSIS-RELATED CAREERS

- • Sales and support of ERP software
  • Business analysts for user organizations
  • Auditing, compliance, and security
  • Web development
  Programmer analyst
  • Business systems analyst
  • System liaison
  • End-user analyst
  • Business consultant
  • Systems consultant
  • Systems support analyst
  • Systems designer
  • Software engineer
  • System architect
  • Web architect
  • Webmaster
  • Web developer
  Sometimes systems analysts might also be called project leaders or project managers.

THE ANALYST AS A SYSTEM DEVELOPER (THE HEART OF THE COURSE)

Aktivitas-aktivitas pada Tahap Analisis

Analysis Activities



Analysis Activities

Mengumpulkan Informasi

Mendefinisikan Kebutuhan Sistem

Memprioritaskan Kebutuhan

Membuat Prototype untuk melihat feasibility dan menemukan kemungkinan lain

Generate dan evaluasi alternatif-alternatif

Review Rekomendasi Bersama manajemen

- Ada **6** aktivitas yang harus diselesaikan pada tahap analisis.
- Kegiatan-kegiatan ini saling melengkapi dan biasanya diselesaikan secara bersamaan
- Contohnya: Sistem analis mengumpulkan informasi secara terus menerus dan menetapkan persyaratan berdasarkan informasi tersebut.

1. Mengumpulkan Informasi

- Sumber Informasi:
  1. Calon User Sistem
  2. Dokumen Perencanaan dan Dokumen Kebijakan Organisasi
  3. Dokumentasi dari Sistem Eksisting
  4. Perusahaan lain yang menggunakan sistem yang serupa

1. Mengumpulkan Informasi

- Analis harus memiliki Common Business Knowledge untuk dapat melakukan pencarian informasi ini
- Analisis juga harus mengumpulkan informasi Teknis:
  - aktivitas user sekarang dan yang akan datang,
  - identifikasi dimana saja aktivitas pekerjaan akan dilakukan di masa yang akan datang, dan
  - identifikasi semua sistem lain yang berhubungan dengan sistem yang akan dibangun

1. Mengumpulkan Informasi

- Key Question:

Do we have all of the information (and insight) we need to define what the system must do?

2. Mendefinisikan Kebutuhan Sistem

- Informasi yang telah dikumpulkan dapat menggambarkan kebutuhan-kebutuhan berikut:
  1. Kebutuhan Teknis: jumlah transaksi yang diharapkan, kebutuhan performance sistem, dll
  2. Kebutuhan Fungsional: apa yang harus dapat dilakukan oleh sistem

2. Mendefinisikan Kebutuhan Sistem

- Pada tahap ini dilakukan pemodelan untuk membantu merekam dan mengkomunikasikan apa yg sebenarnya dibutuhkan
- Banyak tipe model yang berbeda yang digunakan pada tahap ini

2. Mendefinisikan Kebutuhan Sistem

- Ada 2 tipe model sistem yang dibuat
  1. **Model Logik**: menunjukkan apa yang harus dilakukan sistem dengan sangat rinci, tanpa berkomitmen pada teknologi apa pun

  2. **Model Fisik**: bagaimana cara sistem akan diimplementasikan. Misal, model fisik dari output akan mencakup perincian tentang format output tersebut.

Perbedaan antara model logis dan fisik adalah konsep kunci yang membedakan analisis sistem dan desain sistem

Model spesifik yang dibuat tergantung pada teknik yang digunakan oleh analisis sistem

2. Mendefinisikan Kebutuhan Sistem

- Key Question:

What (in detail) do we need the system to do?

3. Memprioritaskan Kebutuhan

- Why prioritize the functions requested by the users?

Sumber daya selalu terbatas, dan analis harus selalu siap untuk memperbaiki ruang lingkup sistem.

3. Memprioritaskan Kebutuhan

- Karena itu, penting untuk mengetahui apa yang mutlak diperlukan.
- Jika tidak, kebutuhan sistem cenderung terus berkembang karena pengguna membuat lebih banyak saran dan permintaan (fenomena yang sering disebut dengan ***scope creep***)

3. Memprioritaskan Kebutuhan

- Key Question

  What are the most important things the system must do?

4. Membuat Prototype untuk melihat feasibility dan menemukan kemungkinan lain

- Tujuan utama membangun prototipe selama analisis - sering disebut *discovery prototypes* - adalah untuk ***lebih memahami kebutuhan*** pengguna

4. Membuat Prototype untuk melihat feasibility dan menemukan kemungkinan lain

- two key questions

1. *Have we proven that the technology proposed can do what we think we need it to do?*
2. *Have we built some prototypes to ensure the users fully understand the potential of what the new system can do?*

5. Generate dan evaluasi alternatif-alternatif

- Akan Ada banyak alternatif untuk desain akhir dan implementasi sistem
- Sehingga sangat penting untuk mendefinisikan dan mengevaluasi semua kemungkinan

- Semua alternative kebutuhan dan teknologi yang akan digunakan muncul

5. Generate dan evaluasi alternatif-alternatif

- Setiap alternative dimodelkan
- Setiap alternative memiliki biaya, keuntungan-keuntungan, dan karakteristik masing-masing yang harus diukur dan dievaluasi dengan hati-hati.
- Sehingga alternative terbaik dapat terpilih

5. Generate dan evaluasi alternatif-alternatif

- Key Question

  What is the best way to create the system?

6. Review Rekomendasi Bersama manajemen

- 5 kegiatan sebelumnya dilaksanakan secara parallel
- Sedangkan aktivitas ke-6 ini biasanya dilakukan **jika** 5 aktivitas analisis lainnya sudah selesai atau hampir selesai

6. Review Rekomendasi Bersama manajemen

- Manajemen harus selalu diberi informasi tentang kemajuan melalui pelaporan proyek rutin.
- Dan manajer proyek pada akhirnya harus merekomendasikan solusi dan mendapatkan keputusan dari manajemen.

6. Review Rekomendasi Bersama manajemen

- Pertanyaan yang harus dipertimbangkan analis adalah sebagai berikut:
  - Haruskah proyek dilanjutkan?
  - Jika proyek berlanjut, alternatif apa yang merupakan pilihan terbaik?
  - Menerima alternatif yang disarankan, apa yang harus direvisi dari anggaran dan jadwal untuk menyelesaikan proyek?

6. Review Rekomendasi Bersama manajemen

- **Key Question**

  Should we continue with the design and implement the system we propose?

Analysis Activities And Their Key Questions

Analysis activities	Key questions
Gather information	Do we have all of the information (and insight) we need to define what the system must do?
Define system requirements	What (in detail) do we need the system to do?
Prioritize requirements	What are the most important things the system must do?
Prototype for feasibility and discovery	Have we proven that the technology proposed can do what we think we need it to do? Have we built some prototypes to ensure the users fully understand the potential of what the new system can do?
Generate and evaluate alternatives	What is the best way to create the system?
Review recommendations with management	Should we continue with the design and imple ment the system we propose?

References

1) systems analysis book changing world 5th-Satzinger, John

References

1) systems analysis book changing world 5th-Satzinger, John
2) Systems_Analysis_Design_UML_5th ed _Alan Denis