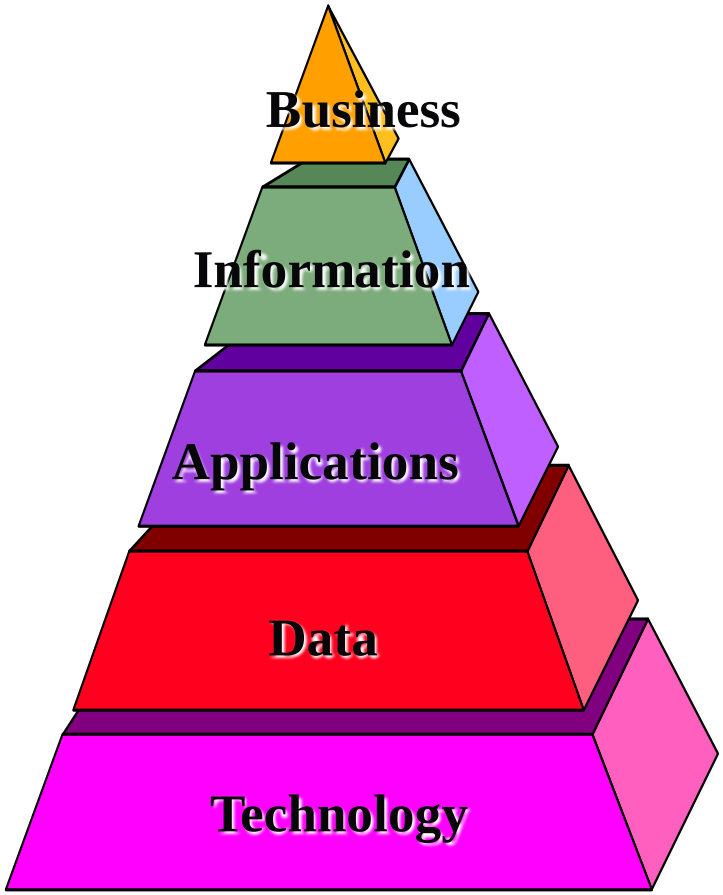
مدیریت فنّاوری اطلاعات و سیستمهای محاسباتی انسان محور

فتانه تقی یاره

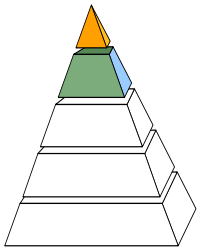
دانشکده مهندسی برق و کامپیوتر

دانشگاه تهران

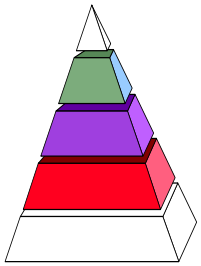
مدل DOE برای معماری اطلاعات



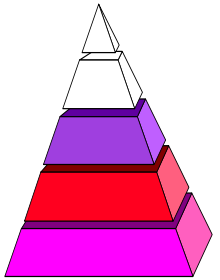
راهبری اطلاعات



مدیریت استراتژیک



مدیریت اجرائی



تعریف

فناوری اطلاعات

عبارت است از استفاده ازسخت افزار؛ نرم افزار؛ و زیر ساختهای پشتیبان برای مدیریت و تحویل اطلاعات

رئوس مطالب


دنیای دیجیتال
مزیت رقابتی ماندگار از طریق CRM
دسترسی فراگیر به اطلاعات
سیستم های محاسباتی انسان محور
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دنیای دیجیتال و دارائی های مجازی

Digital World & Business

- **Increasing blurring of industry boundaries**
- **Stronger bargaining power of customers**
- **Commoditization of products and services**
- **Increasing pressure on margins and time-to-market**
- **New business platforms and distribution channels**
- **Active use of IT thinking in products and services**
- **New business and opportunities through “e” (mass-customization)**

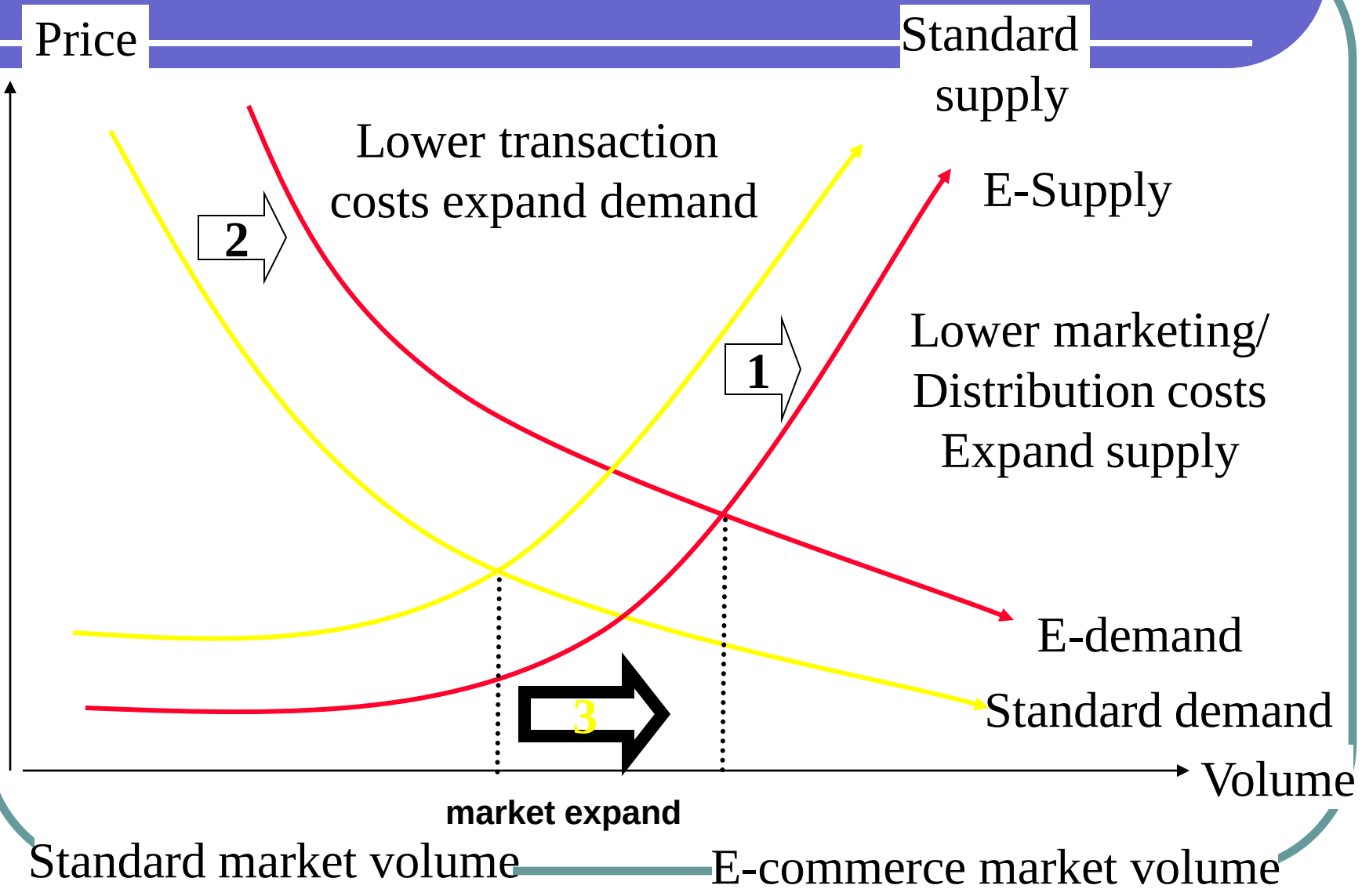
Concrete Benefits of Digital World

- **From Guessing to Knowing**
- **From Mismatch to Perfect Fit**
- **From Lag Time To Real-time**
- **From Supplier Service to Customer Self-Service**

Concrete Benefits of Digital World

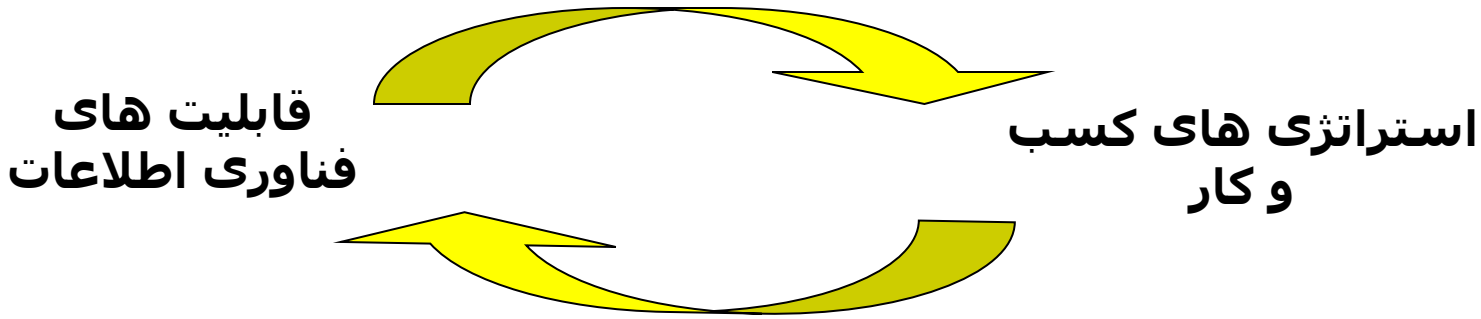
- **From Low-Value-Added Work to Maximum Talent Leverage**
- **From Fixing Errors to Preventing Errors**
- **From 10 Percent Improvement to 10X Productivity**
- **From Separate Silos to Integrated System**

Market Expansion in Digital World



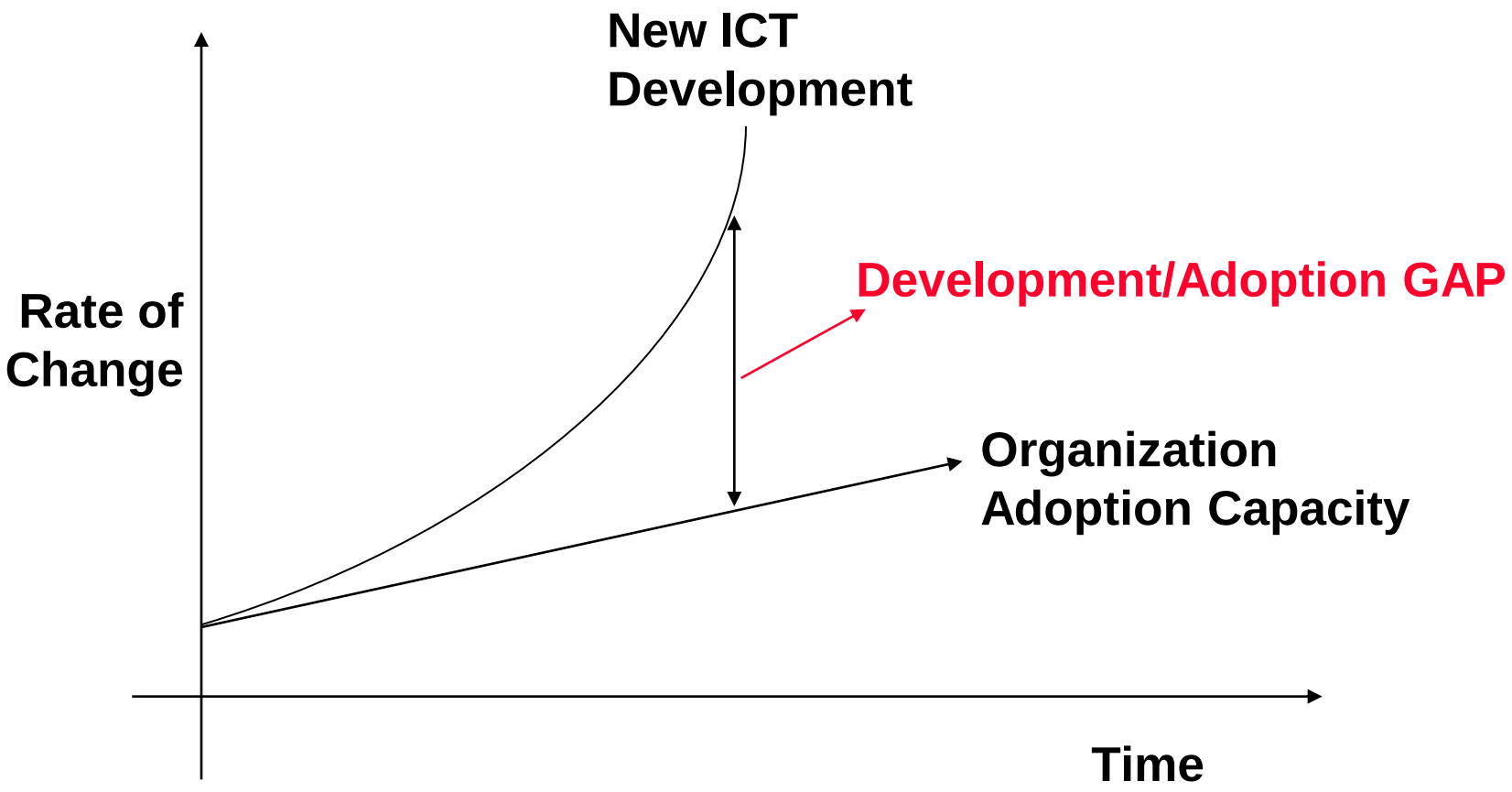
استراتژی و فناوری اطلاعات

چگونه قابلیت های فا می تواند استراتژی های کسب و کار را پشتیبانی نماید؟



چگونه از طریق فا می توان استراتژی های کسب و کار را ایجاد و یا اصلاح نمود؟

ICT Development vs. Adoption Rate



سوالی که مشاور ارشد اطلاعات سازمان باید به آن پاسخ دهد

- چگونه اینترنت می تواند در تحقق اهداف کسب و کار نقش بازی کند؟
  - افزایش کارایی
  - ارتقا اثربخشی
  - ایجاد/ تداوم مزیت رقابتی

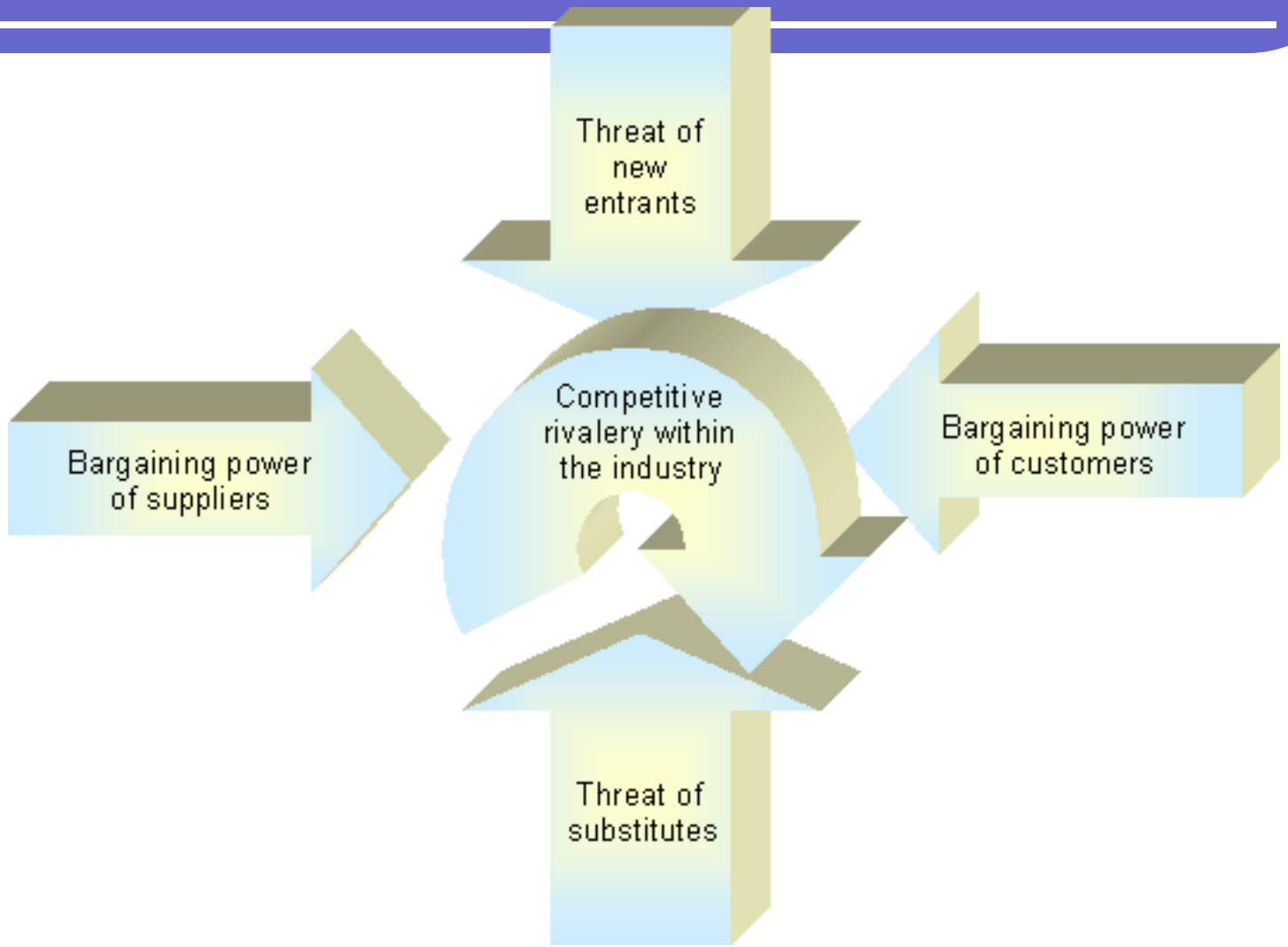
Reasons for Investing on “e”

- **Increase Effectiveness Through Digitalization**
  - **Reduce Transaction Cost**
  - **Reduce Inventory Costs**
  - **Enhance Internal Efficiency (Through Intranet Solutions)**
- **Increase Customer Loyalty**
  - **Making It Easier For Customer to Do Business**
  - **Offering Customers a Self-Service Anytime**

Reasons for Investing on “e”

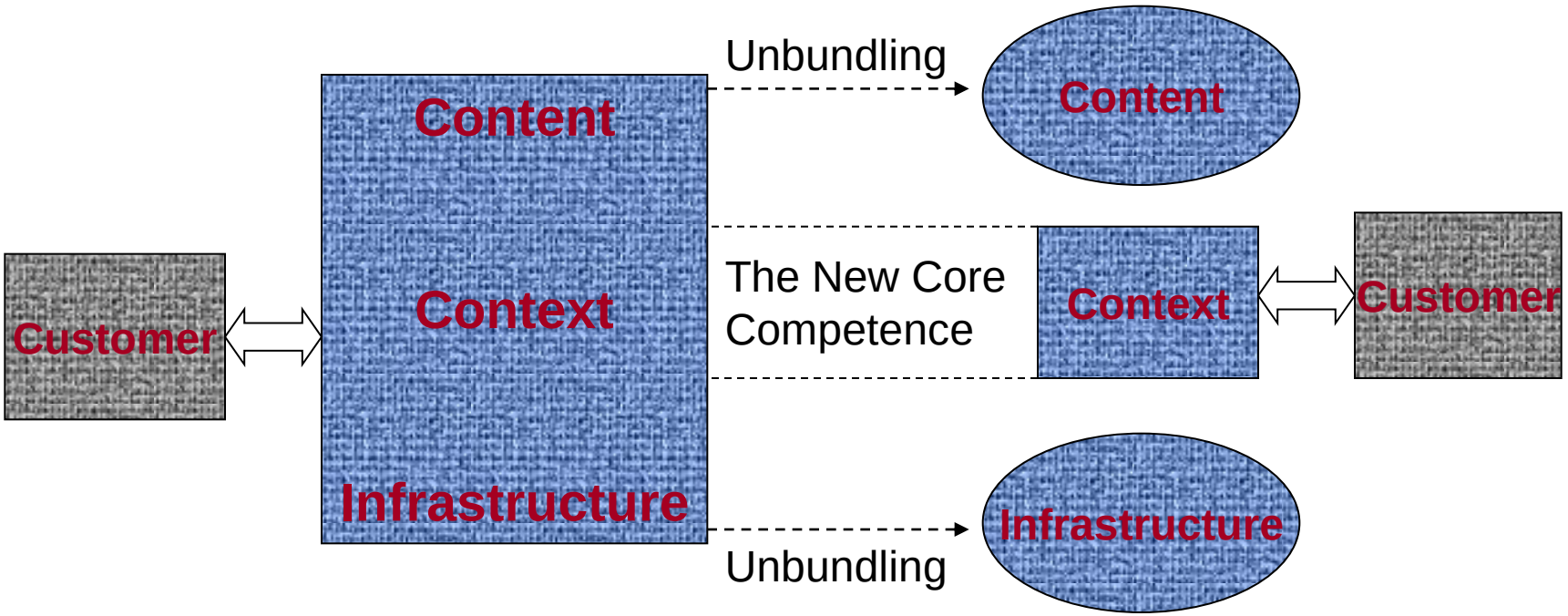
- **Increase Revenue**
  - **More Sales to Existing Customers**
  - **New Customers and Markets**
  - **New Product and Service**
- **Strengthen Brand Name**

Example: 5-Force Porter



Michael E. Porter ‘s Five Competitive Forces

Business Transformation: From Physical To Digital



Why need CRM

- **Increasing in Globalization and Deregulation**
- **Turbulent situation**
- **Survival depends on Value-Preposition not on Technology**
- **Horizontal Organization instead of Vertical, Process-based instead of Function-based**
- **Customer Relationship Management is Essential**

(Security and Trust)

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خلق مزیت رقابتی ماندگار از طریق CRM

CRM چیست؟

- CRM یکپارچه سازی تکنولوژی با فرایندهای کسب و کار در جهت براورده سازی نیازهای مشتریان در طول دروه ارتباط با سازمان است

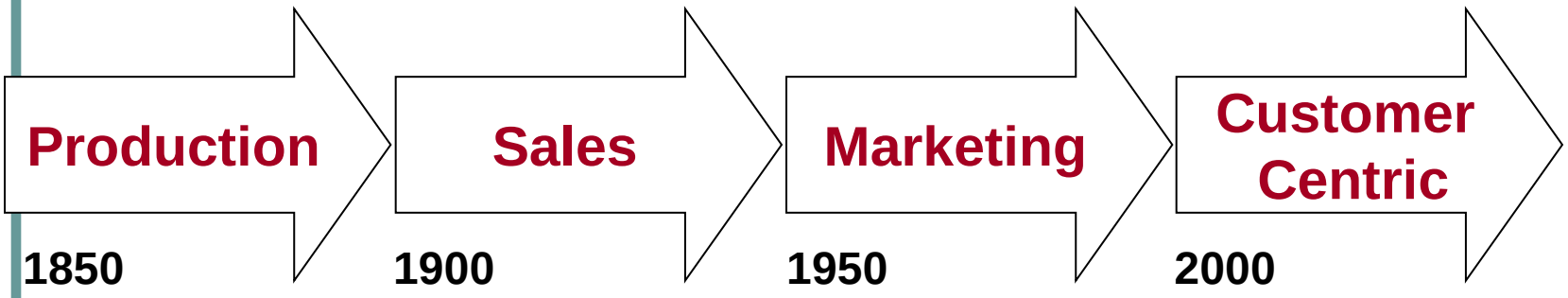
- CRM عبارتست از اخذ؛ تحلیل و استفاده ازاطلاعات مشتری به منظور فروش کالا یا خدمت بیشتر و انجام کاراتر امور

What is CRM?

- **CRM & Marketing:** CRM revolves around marketing. It uses It to gather Data, which used to develop a *MORE PERSONAL INTERACTION* with the customer.

- **CRM & ERP:** CRM means an enterprise wide integration of technologies working together such as data warehouse, Web site, intranet/extranet, phone support system, accounting, sales, marketing and production. (*ERP as back-office integration and CRM as front-office integration*)

CRM Marketing



Market Segmentation vs. one-to-one relationship

Customer Lifetime Value

Marketing Mix vs. Individual Customer Preference

IT as a enabling factor

Toward One-to-One Marketing

"In the 1980s, we saw in every individual a customer. In the 1990s, we ought to see in every customer an individual."

Jack Welch,
CEO, General Electric

CRM

- CRM is an expensive, time consuming and complex proposition.
- As technology is still not available to completely develop the full power of a customer-centric approach.
- CRM is an opportunity to rise above minor advantages and develop an actual relationship with your customers.

Customer Centric Orientation

CRM is critical because of:

- **Competition**
- **Differentiation**
- **Word of mouth**
- **Cross-selling and upselling**
- **Acquiring new customers less expensively**

Co-opetition("3C" concept)

- Value-added network: An effective response to increased time-to-market pressure, cost pressure and need for higher quality.

Collaborative

Customer

Competitor

Summary

- Unbundled 3 Processes
  - Customer Relationship Management
  - Product Innovation
  - Infrastructure Management
- Outsource as much as possible.
- CRM
  - Identify Customer
  - Attract
  - Build Relationship With Customer
- Loyalty is the key.

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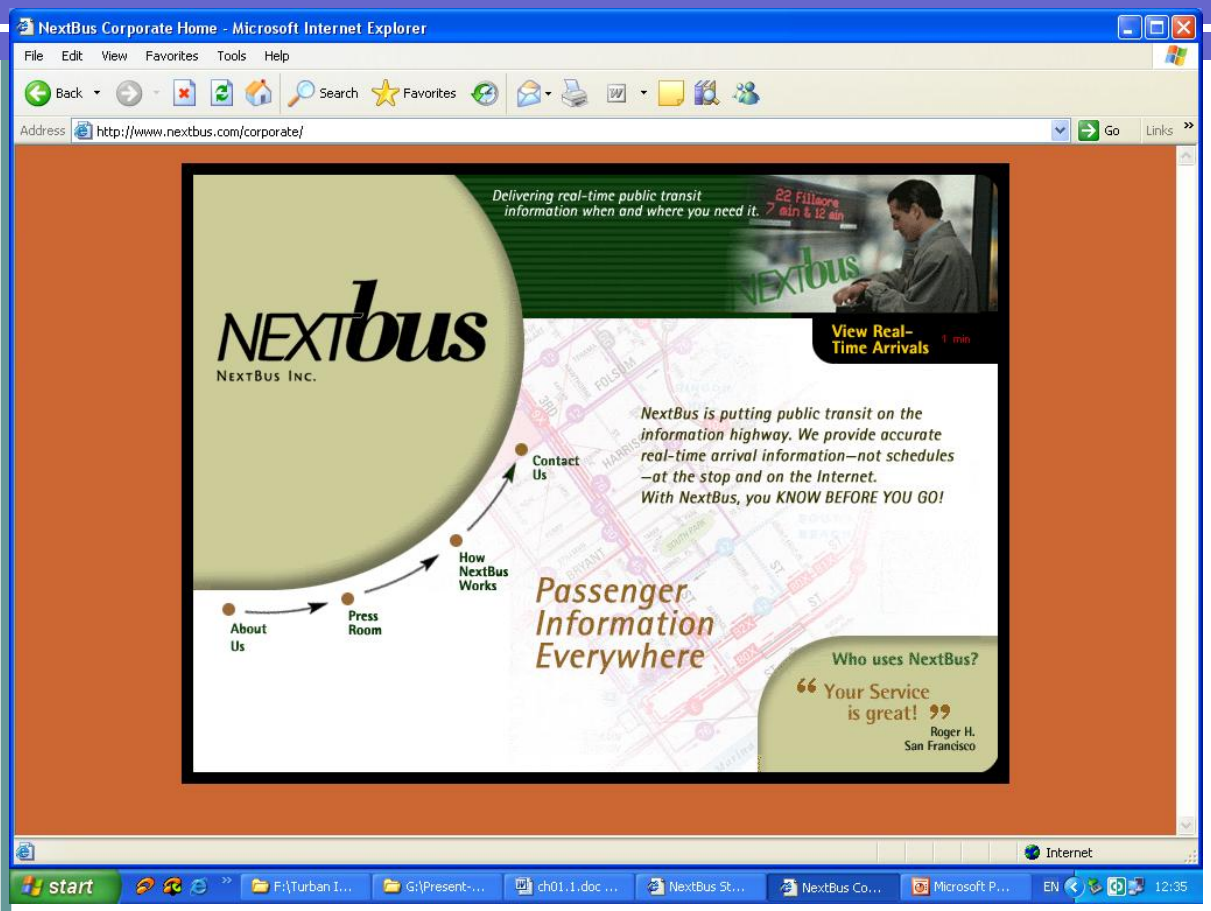
Definition

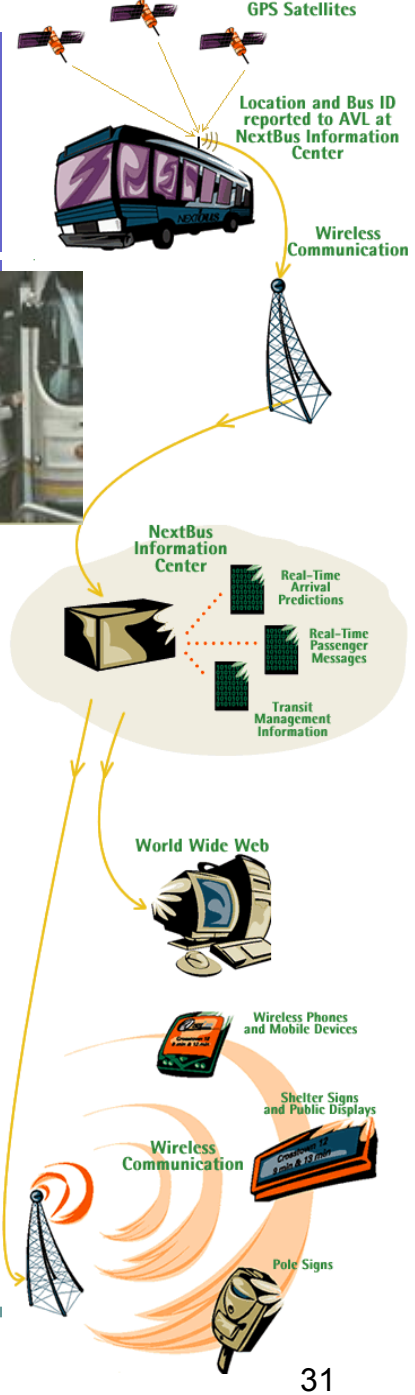
Global Computing achieves high throughput computing by harvesting a very large number of unused computing resources connected to the Internet.

Ubiquitous Access to Information

- The future of computing rests on a wireless “always on” network connection.
- Wireless networking is progressing rapidly
- Mobile computing devices are becoming smaller, cheaper, more powerful and better integrated
- Major transforming potential in research and educational environments

Example: IT at Work





Nextbus : A superb Customer Service

Example: Minicase , DARTMOUTH COLLEGE GOES WIRELESS

***Student body**: About 5,700 undergraduate and graduate students.*
***Faculty and staff**: About 1,900*
Access points: 1,400
***Wireless network users**: About 7,000 connections a day; the busiest time is late afternoon*

To transform a wired campus to a wireless…..Dartmouth has made many innovative usages of the systems….

http://www.dartmouth.edu/

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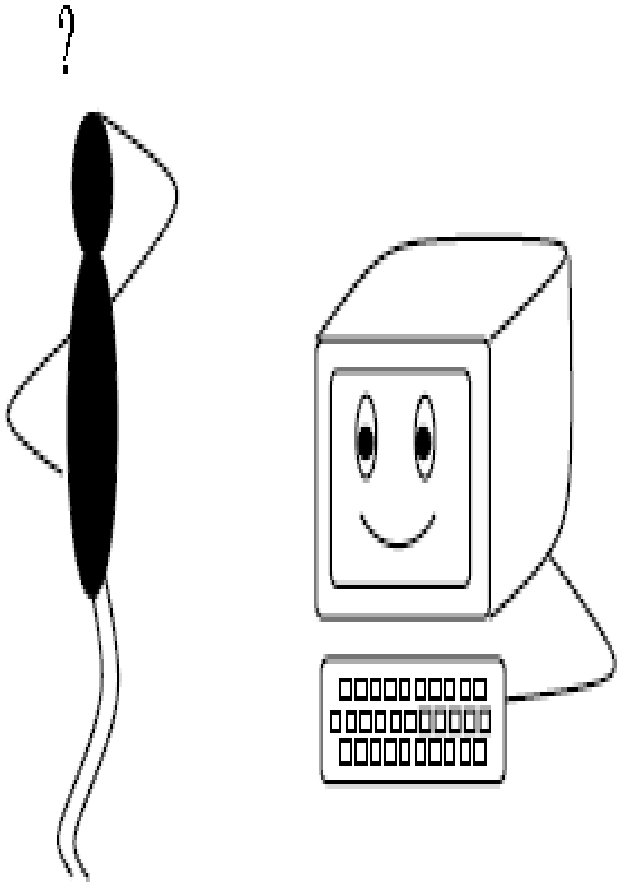
What is this all about?

- **User and system: two complex entities that have to interact.**
- **The aim is to make the interaction between the two easier and more satisfying.**



HCC Definition

- Human-centric technologies is a long-term, strategic research direction that unleashes the power of computing, communication and content to bring about continual emergence of life-changing applications.

- IT needs to “get the end user experience right,” with the focus on designing devices that are easier for users to interact with to find relevant information. (Carnegie Mellon and IBM)

Definition, continued

- **Connecting Human instead of Device**
- **Devices Embedded in Objects, including doors, socks, batteries,**
- **Speak to the device freely, with the solution allowing the human to tell the device how to work, as opposed to the device constraining the human.**
- **Emphasis on Human instead of Device**

User Modeling

- Aim: building systems that people can use effectively,
  "a user model is a representation of the properties of a particular user"
- A system that constructs and consults user models can adapt diverse aspects of its performance to individual users
- It's (again!) an interdisciplinary problem:
  - artificial intelligence
  - education
  - psychology
  - linguistics
  - human-computer interaction and information science

User Model

- **Definition**
  - A collection of information and assumption about user
- **It contains**
  - **Static information**
    - Demographic information
    - User's capabilities
  - **Dynamic information**
    - Behavioral information
      - Page visited
      - Frequency of visit

Generating UM

- **User-guided approach**
  - Users create their own model
- **Automatic approach**
  - Process of creating a user model is controlled by the system
- **Mixed approach**
  - Use both approach

User profile

- **Definition**

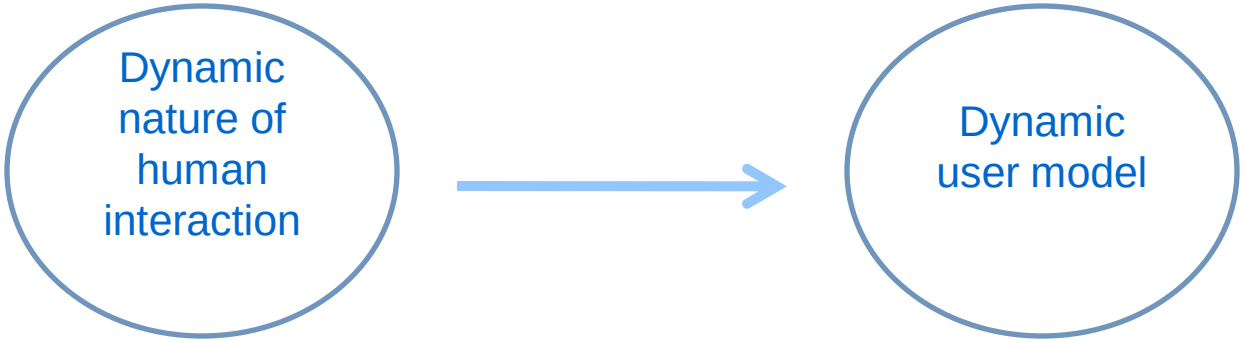
  A collection of information about user combining demographic information (name, age and location), usage Information (page visited and frequency of visit) and interests or goals

User Modeling

- **Definition**
  - Whole process of constructing a user model
- Inferring information about a user

Drift

- Describes continuous change in a user's interests and behaviors



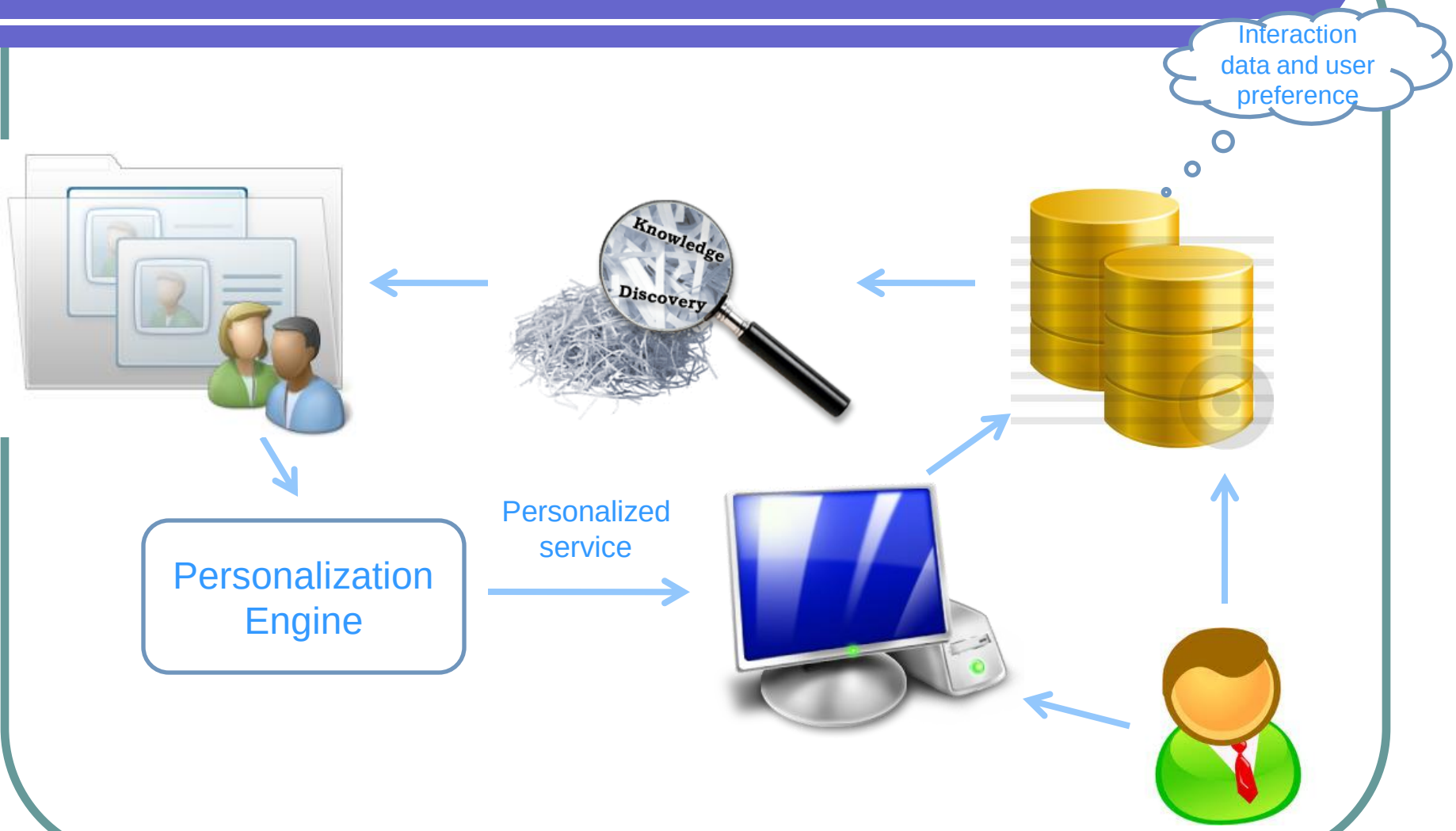
Drift (Cont)

- Approaches to alleviate the problem of drift
  - Placing Less Weight on Older Observations
    - Recent user activity play a greater role
  - Use of Windowing Techniques
    - Data is limited to a time window
  - Use of Dual User Models
    - Long and short-term user models

Outline

- Definition and concept
  - User model
  - User profile
  - User modeling
  - Drift
- **User Modeling processes**
  - Collecting data
  - Building user model
  - Apply user model
- Future work and Conclusion

Process of UM



Process of UM

- Collecting data about user
- Processing the data to build or update the user model
- Apply the user model to provide the adaptation

Collecting user data

- **Two approach**
  - **Explicitly**
    - Require users to provide personal information
  - **Implicitly**
    - System watches the user's actions
    - Infers a model or profile for the user based on those actions

Collecting user data explicitly

- **Methods**
  - Form filling
  - Selection of one of several predefined profiles
  - Selection of a set of terms, with the possibility to weight terms
  - Rating of items
  - User interview

Collecting user data explicitly(Cont)

- **Advantages**
  - Resulting profile would be reasonably accurate
  - System output would be predictable
- **Disadvantages**
  - It may place a large load on user
  - Possibility that the user may not be willing to cooperate

Collecting user data Implicitly

- **Sources of Data**
  - Client computer
    - Through cookies
    - Problem: users may lock them
  - User's navigation context
  - User access logs

Collecting user data Implicitly (Cont)

- **Advantages**
  - Approach is unobtrusive
  - Amount of modeling information can be very large
- **Disadvantage**
  - Has greater uncertainty

Outline

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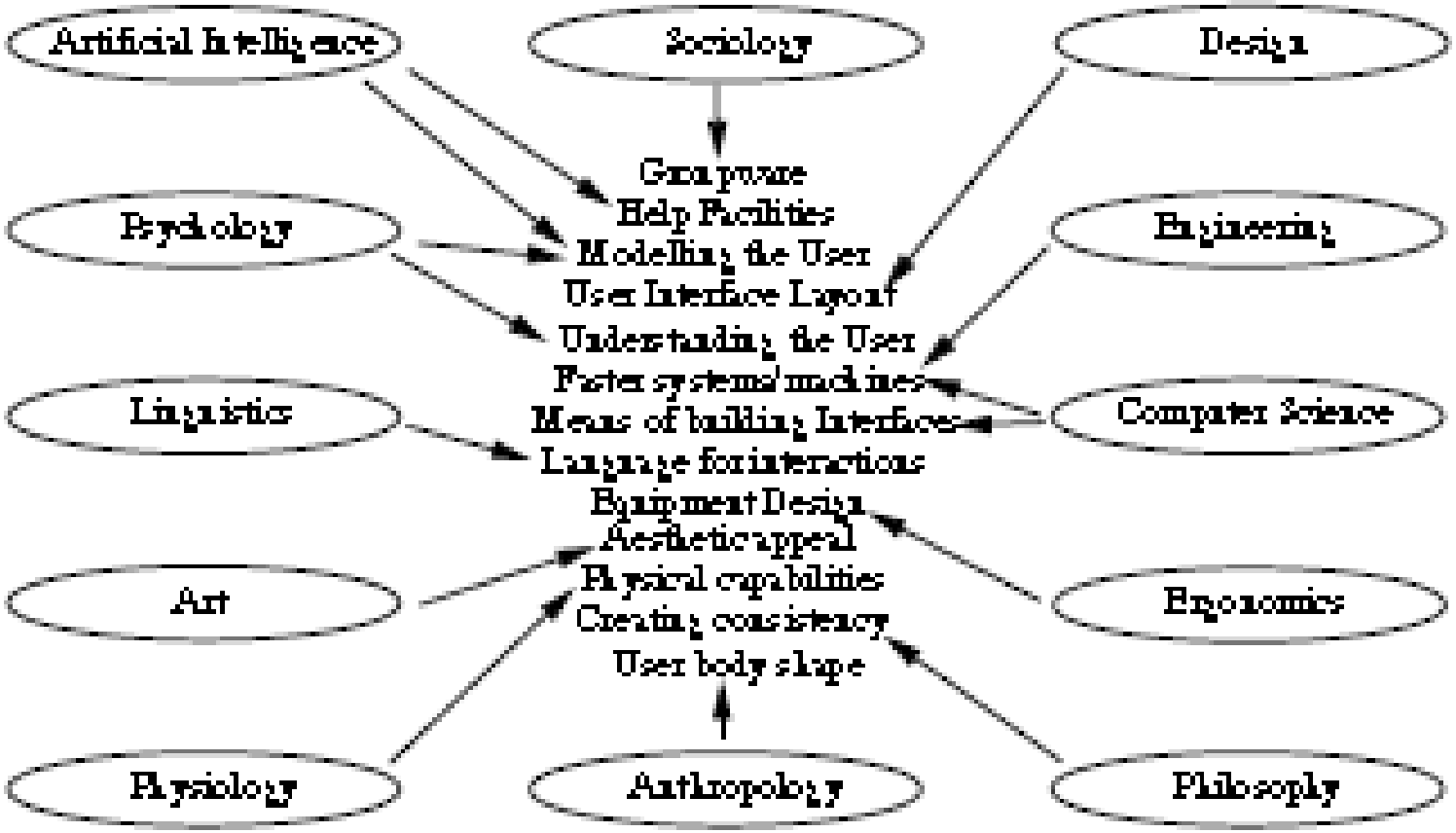
Building User model

- Data mining and machine learning techniques
  - Clustering
  - Association rules
  - Decision Tree
  - K-Nearest Neighbor
  - Neural Network
  - Support Vector Machine
- Rule based induction
- Statistical methods

An interdisciplinary field



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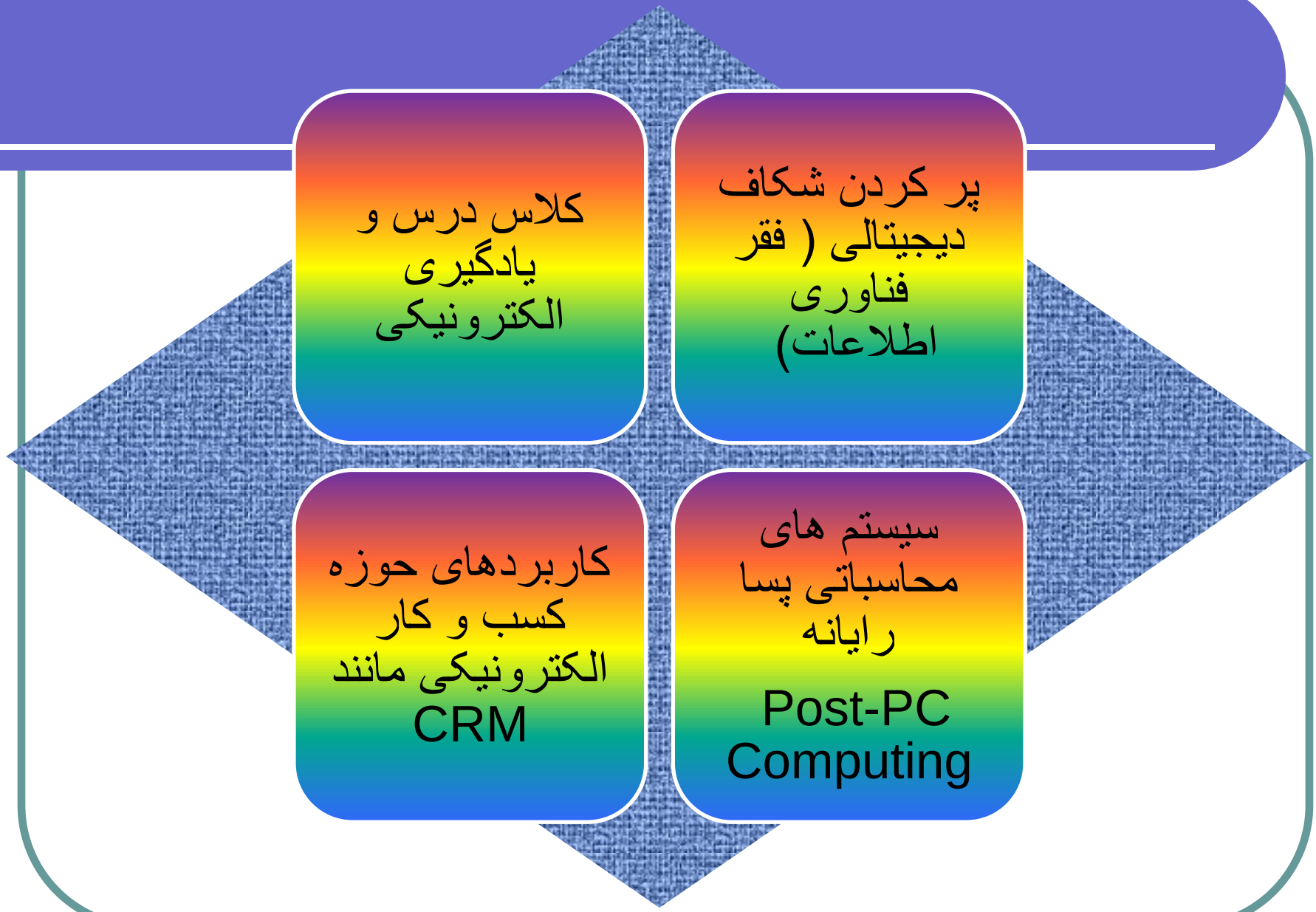
HCC Subjects

- Human-computer interaction
- User-centered Design
- Social computing and social intelligence
- Ubiquitous computing and mobile systems
- Gaming
- Computer-assisted Learning and Cognition
- Privacy, Security and trust management
- Human-centered Evaluation
- Information Visualization and Visual Analytics
- Semantic Systems


پر کردن شکاف دیجیتالی (فقر فناوری اطلاعات)
کلاس درس و یادگیری الکترونیکی
سیستم های محاسباتی پسا رایانه
Post-PC Computing
کاربردهای حوزه کسب و کار الکترونیکی مانند CRM

کلاس درس و یادگیری الکترونیکی

- ارتقاءِ یادگیری همکارانه دانشجویان؛ اساتید؛ و شهروندان از طریق واسط های وب؛
- طراحی ابزارهای اشتراک داده ؛ واسط های بدیع؛ کلاس های هوشمند؛ سرویس های حمل محتوی که کلاس و آزمایشگاه ها را بطور مجازی گسترش می دهند.
- توسعه سیستم ها ی شبیه ساز جهت نمایان سازی جهان ناپیدای ریاضی و علوم

کاربردهای حوزه کسب و کار الکترونیکی مانند CRM

- شخصی سازی (Personalization)
- تطبیق پذیری (Adaptation)
- اعتماد، امنیت (Trust, Security)

سیستم های محاسباتی پسا رایانه

- NLP
- Speech Recognition
- User Interface
- Psychology
- Sociology
- Context Recognition, Ontology

پر کردن شکاف دیجیتالی (فقر فناوری اطلاعات)

- ایجاد یک نقش موثر برای اینترنت و سایر فناوری های اطلاعات در جهت پرکردن شکاف دیجیتالی
- نگاه چند گستره ای (Multi Disciplinary) به شبکه های اجتماعی
- کشف الگوی رفتاری گروه های مختلف اجتماعی
- مهیا کردن محیط های محاسباتی فردا برای مشارکت همگانی

سایر حوزه ها

- مدل های شناختی و استعاره ها(Cognitive Models and metaphors)
- مدل های محاسباتی رفتار(Behaviour)
- تاثیرات اجتماعی؛ فرهنگی و اقتصادی IT
- مدل های منعطف در ساخت(Flexible Manufacturing System)
- پروتوکول های ویژه و کانال های خاص؛ تسخیر؛ دستکاری؛ بازنمایی؛ و ارزیابی (Specific Protocols & Communication Channels; Capturing, Manipulation; Presentation; and Assessment)

Q & A

تشکر از توجه شما