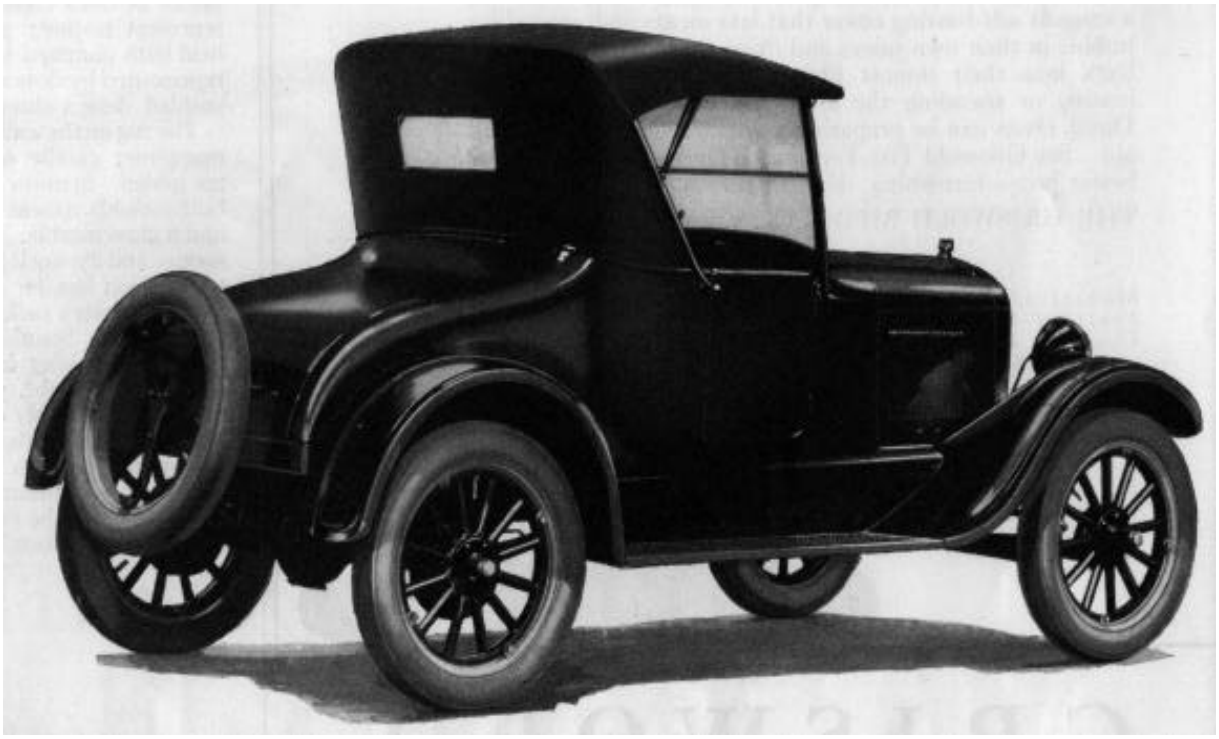
# *Platform for Active Information Dissemination (PAID)*

## Problem Statement

## 27 August 98

**Helmuth Ritzer, Daimler-Benz AG**

***"You can get every car as long as it's black"***
***Henry Ford***



***Ford Model T***




DAIMLERBENZ

# *Personalized Mass Production or "How the world changed since Henry Ford"*

- **Daimler-Benz is committed to the idea of building "Personalized Mass Products"**
  - We offers cars even for the smallest markets and niches, like the SLK or the M-Class.
  - Customers have the choice of buying an individual product.
  - An individual car is build on the assembly line.
  - On average only 6 cars of a production line have the same specification.

# *Consequences*

- **Due to the individualization of products we need very specific aftersales / product information during the complete life cycle of a car**
  - If you want to buy a car we need to make sure that the car can be produced.
  - If we want to service your car we need specific information on
    - the car's specification (engine, transmission, options, etc.)
    - the car's specific service and maintenance procedures
    - the car's specific part numbers
    - the appropriate warranty policies

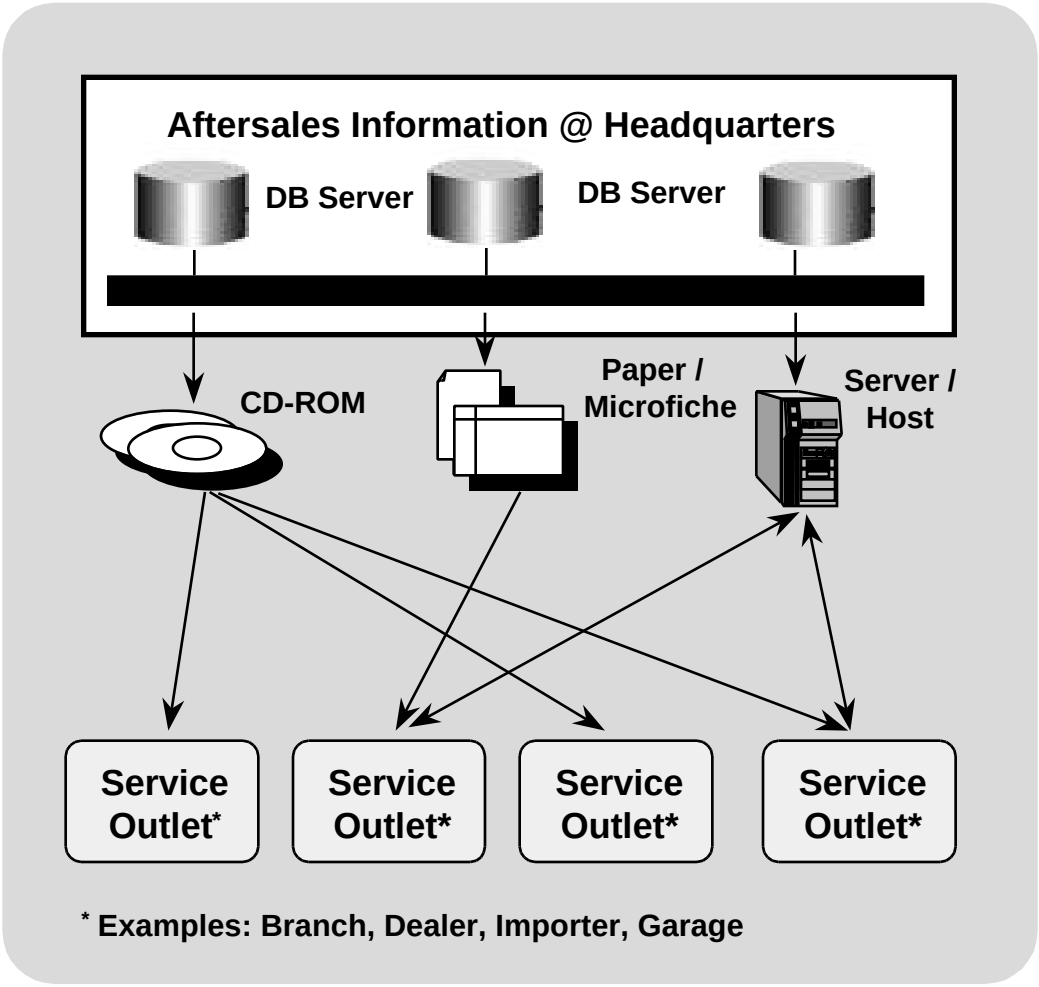
# *The Problem*

- **Daimler-Benz is extending its business in terms of new products and market share over the next years.**
  - About 1.3 million vehicles this year
- **With the introduction of new products and already mentioned individualization of these products the amount of aftersales information increases dramatically.**
- **This information need to be instantly accessible every time (24h), everywhere (6000 dealers in 180 countries), in all major languages.**
  - Information distribution becomes a major concern

# *The Problem*

- **Today we utilize a *variety of different channels* for the distribution of aftersales information**
  - CDROM
  - Online
  - Microfiche
  - Paper
- **which are expensive, inefficient, and inaccurate**

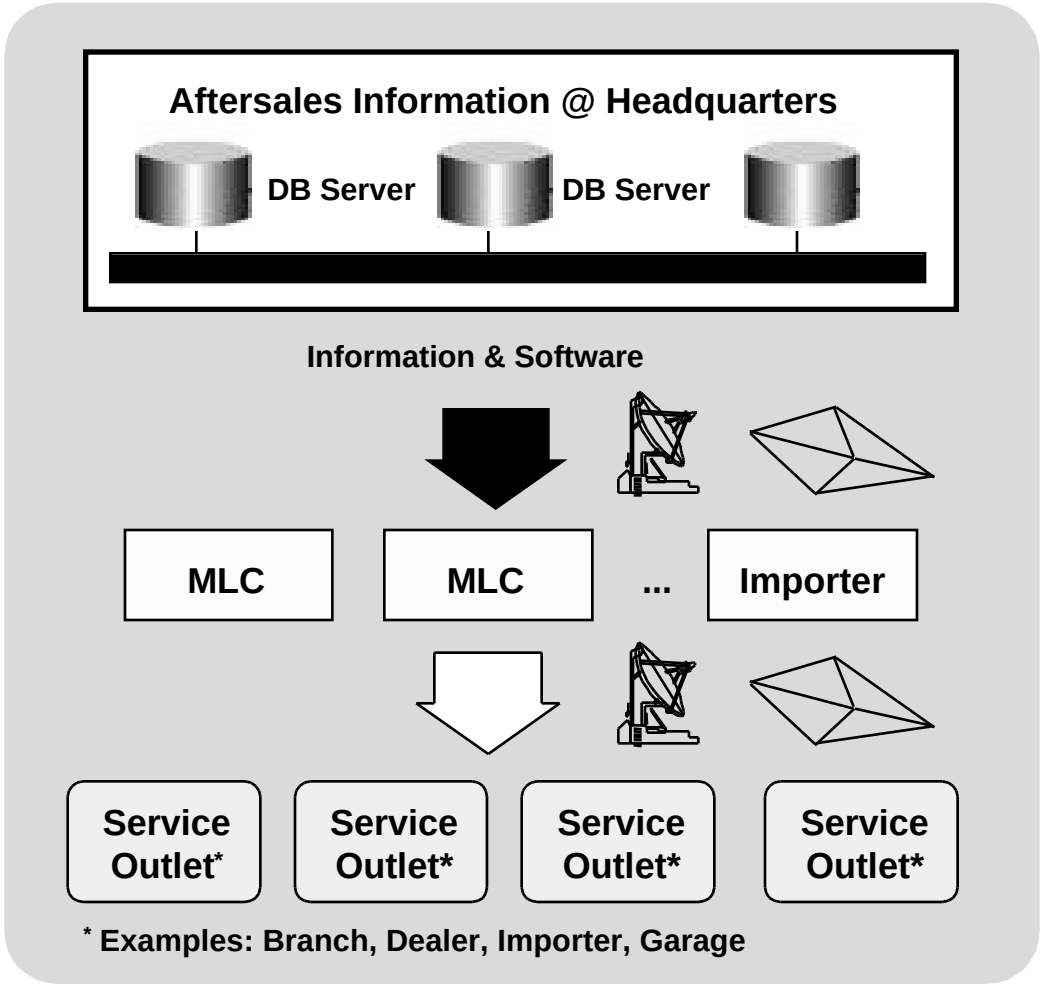
# *Today's Information Distribution Processes*




**Today's Processes**

- ***Inefficient:* Every month complete data sets are distributed via CD-ROM**
- ***Inaccurate:* Information at service outlets is often outdated**

# *Tomorrow's Information Distribution Processes*



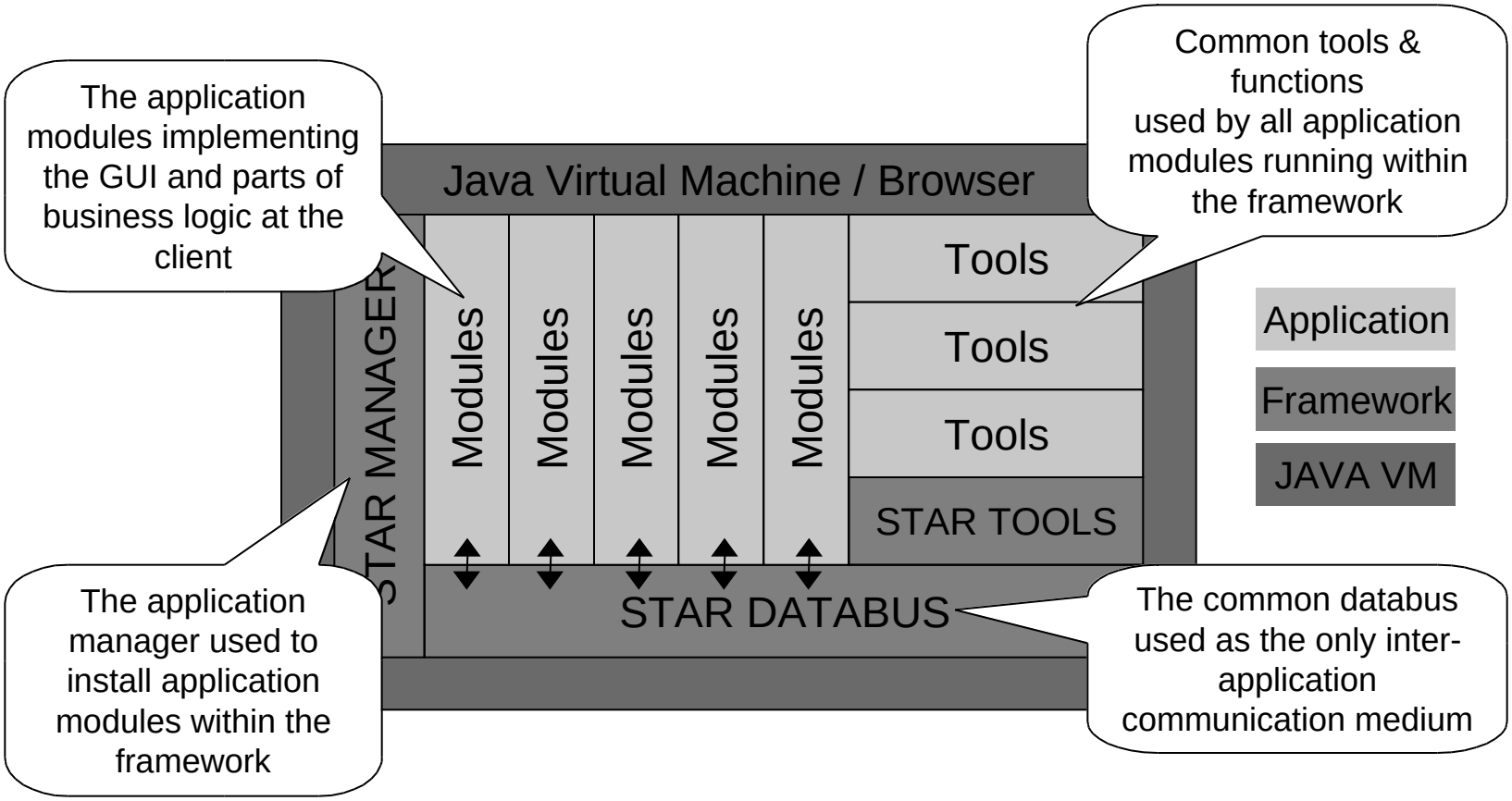

**Tomorrow's Processes**

- ***Efficient:*** ***New and only new information is distributed as soon as it is available at publisher.***
- ***Accurate:*** ***Every dealer accesses databases with customized, always up-to-date content.***

# *A Glimpse into the Future: STAR NETWORK*

- **New Strategic IT platform for all Retailer Applications**
- **Component-based Framework**
- **Open Standards**
  - 100% Pure Java on Clients and Servers
  - CORBA, IIOP
- **Well defined API to Legacy Systems**
- **Standardized Look & Feel**
- **Highly Integrated**

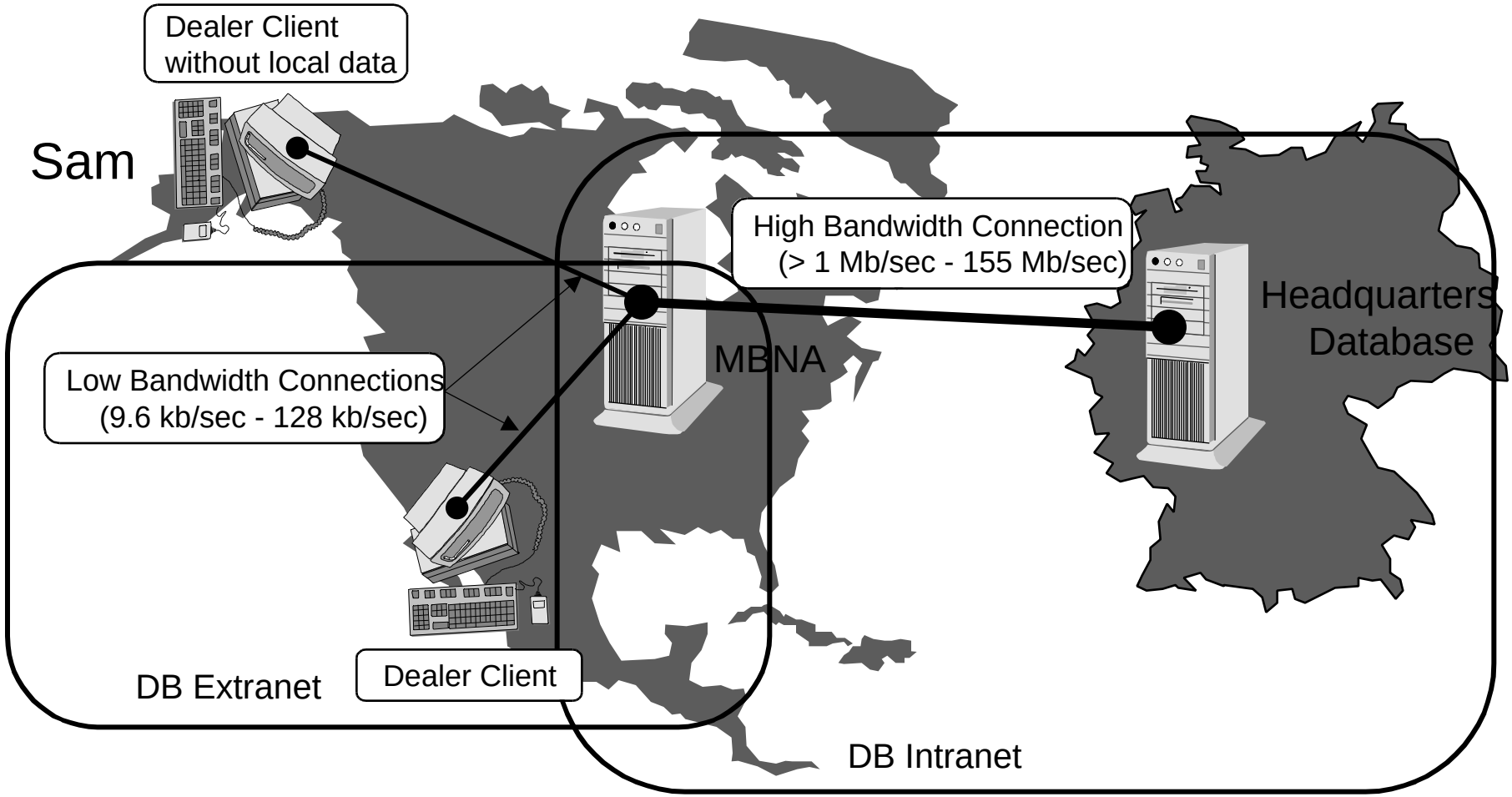
# *STAR NETWORK Software Architecture*



## *The Solution*

Platform for Active Information Dissemination

# *PAID Infrastructure*



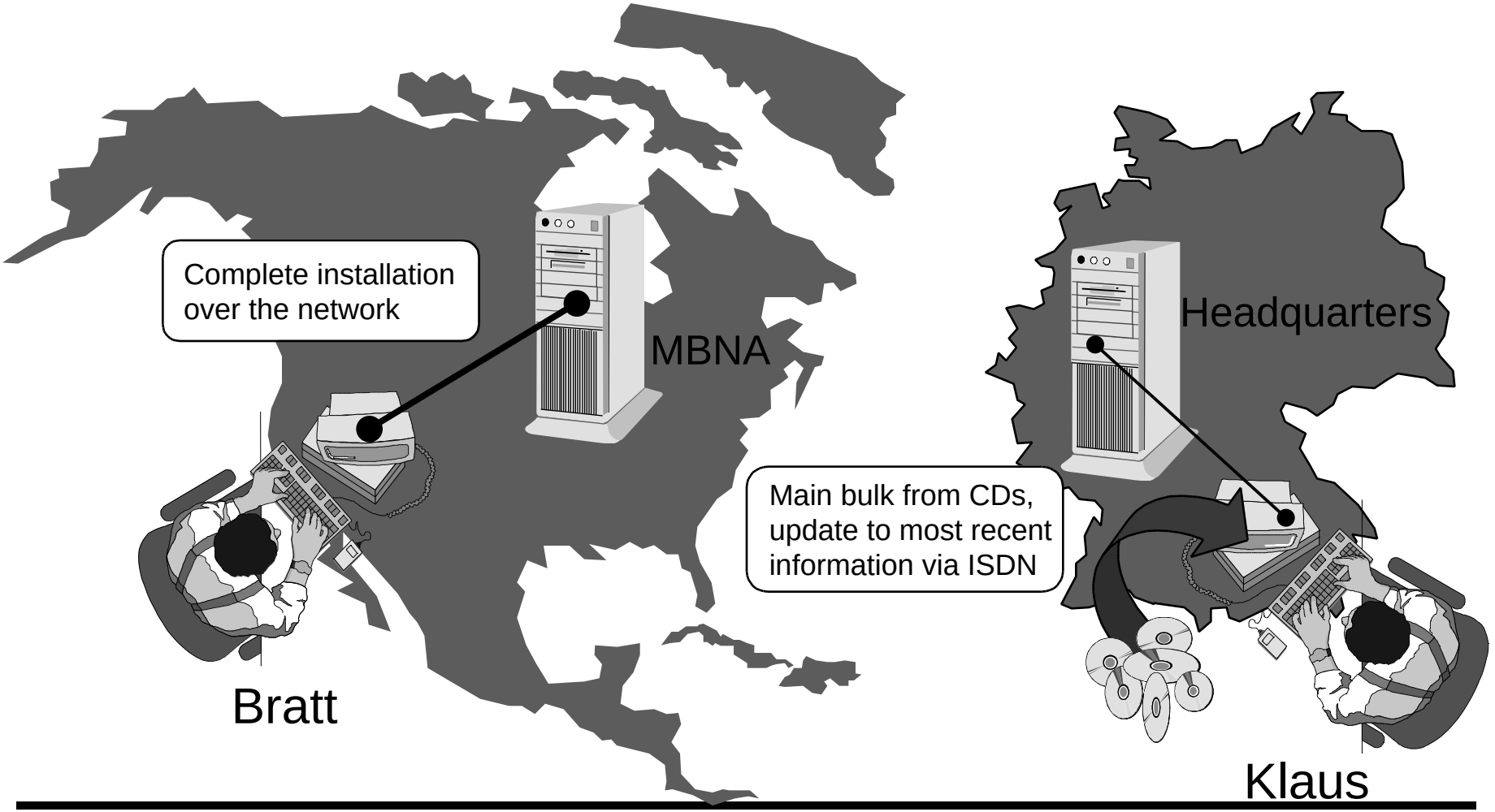



DaimlerBenz

# *Scenarios*

- Adding dealers
- No service due to poor network performance
- Dealer's workshop at 8am
- Introduction of the M-Class in Germany
- Minimizing connection costs
- Mobile garage
- Billing
- Security

# *Scenario 1: Adding dealers*



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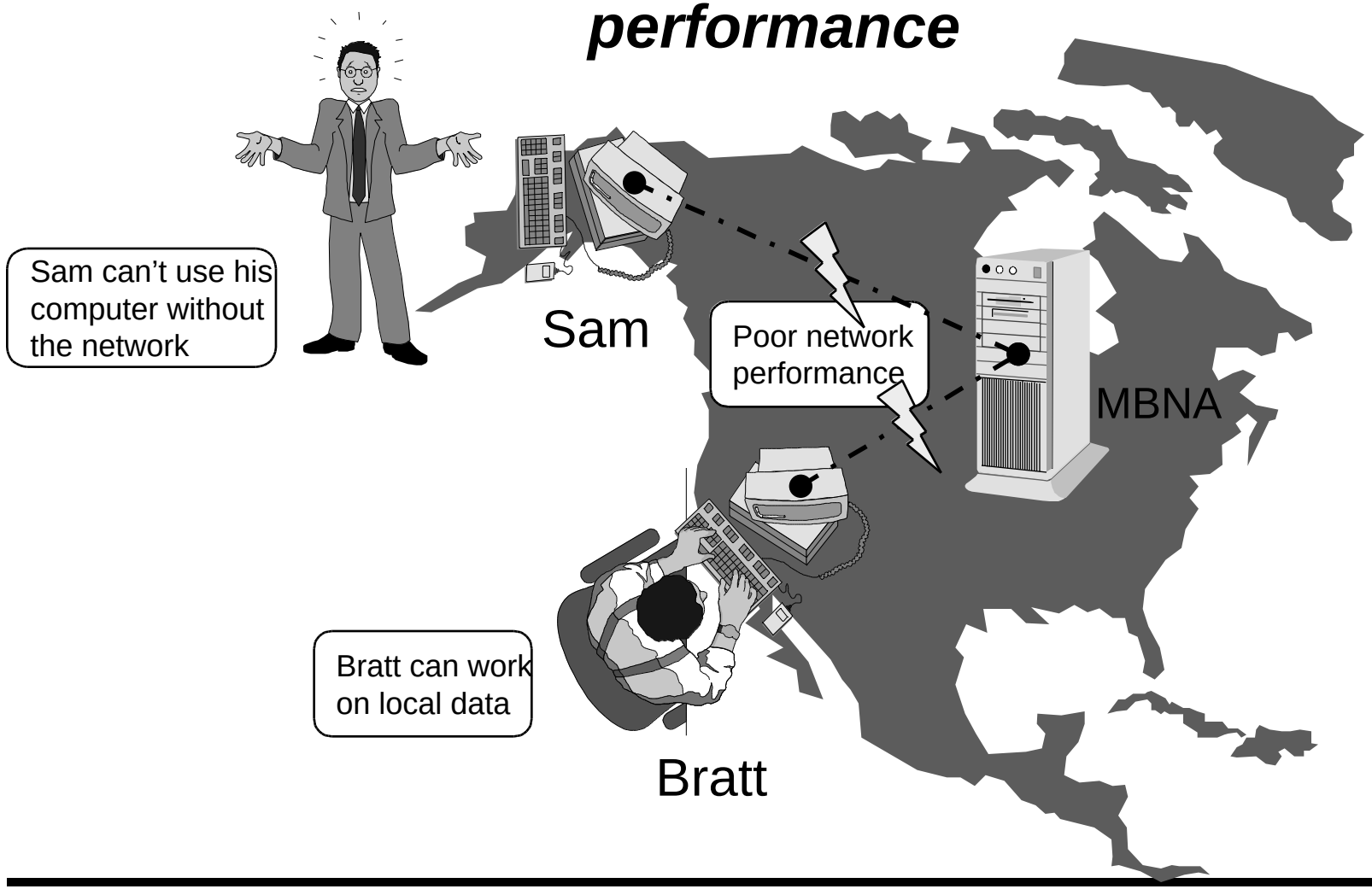
# *Scenario 1: Adding dealers*

- **Two dealers (Bratt and Klaus) are planning to integrate their computers into the DB Extranet. Bratt (residing in Beverly Hills) has a high performance network connection to MBNA. Klaus (Munich) has to pay for his 64KBit ISDN connection. Both dealers want a local copy of some important information according to their business requirements.**
- **Because of his good network capabilities, Bratt decides to install the software and data for STAR PARTS (EPC) and STAR IDENT (FDOK). He retrieves the information from the remote MBNA server. After this process has finished, he owns a copy of an up-to-date subset of the complete DB aftersales database.**
- **Because Klaus has to pay for the ISDN, he decides to install the bulk of the software and data from CD he received from Daimler 2 weeks ago. After the installation the system automatically contacts the closest server (the central server of DB in Stuttgart) and retrieves all updates necessary to bring the local data up-to-date.**

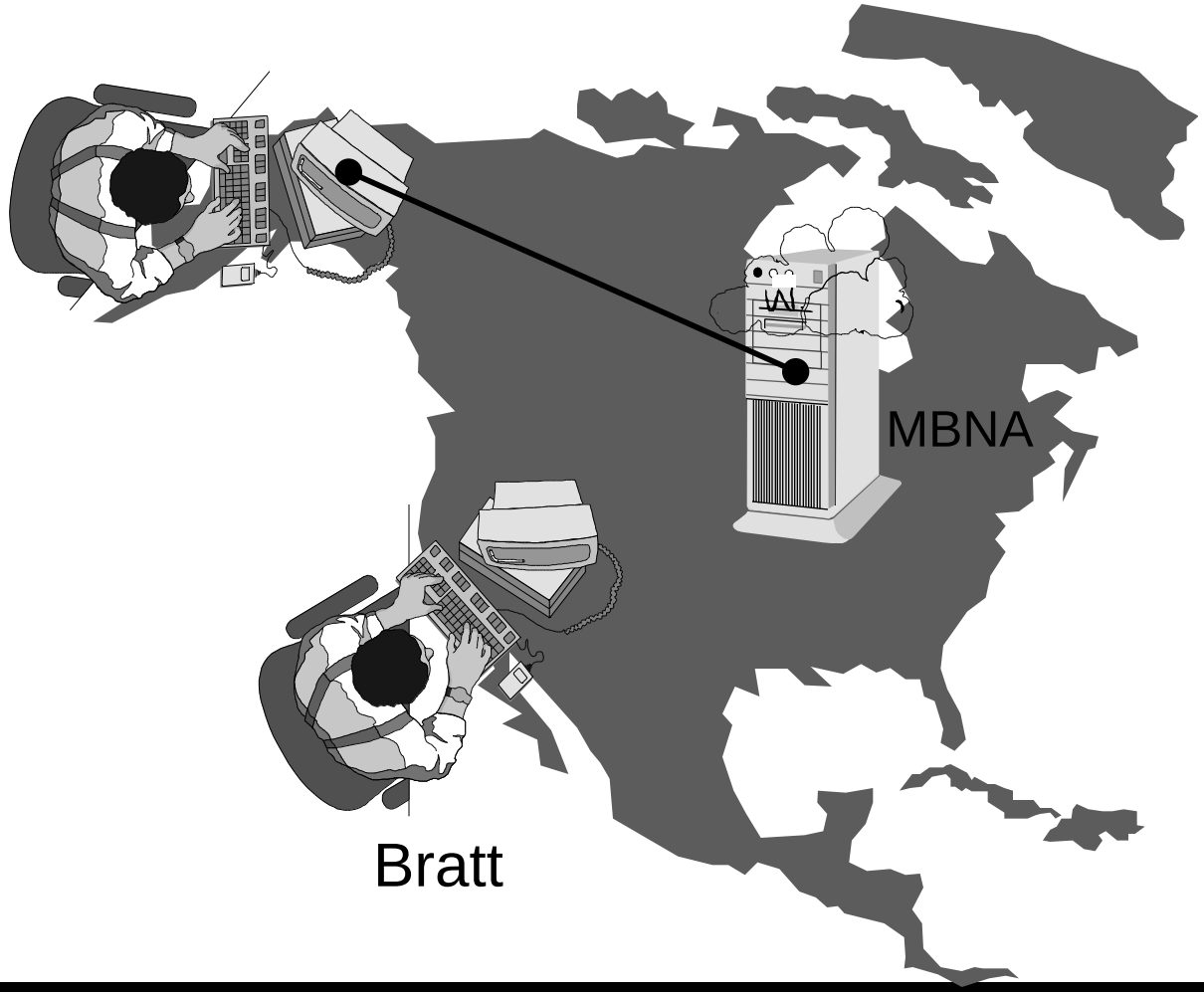
# *Scenario 2: No service due to poor network performance*



# *Scenario 2: No service due to poor network performance*

- **A customer needs a new clutch. Sam tries to access the aftersales database at MBNA. Using the STAR NETWORK standard configuration without local data he experiences a network problem: The transmission rate from MBNA to his computer is very bad. Sam can't get the right part number for the clutch and he does not remember it either. As a consequence he can not guarantee that he orders the right clutch.**
- **Bratt has the same network problems as Sam, but he has access to the price for the clutch on his machine. He can serve the customer because he does not need to access the aftersales database at MBNA.**

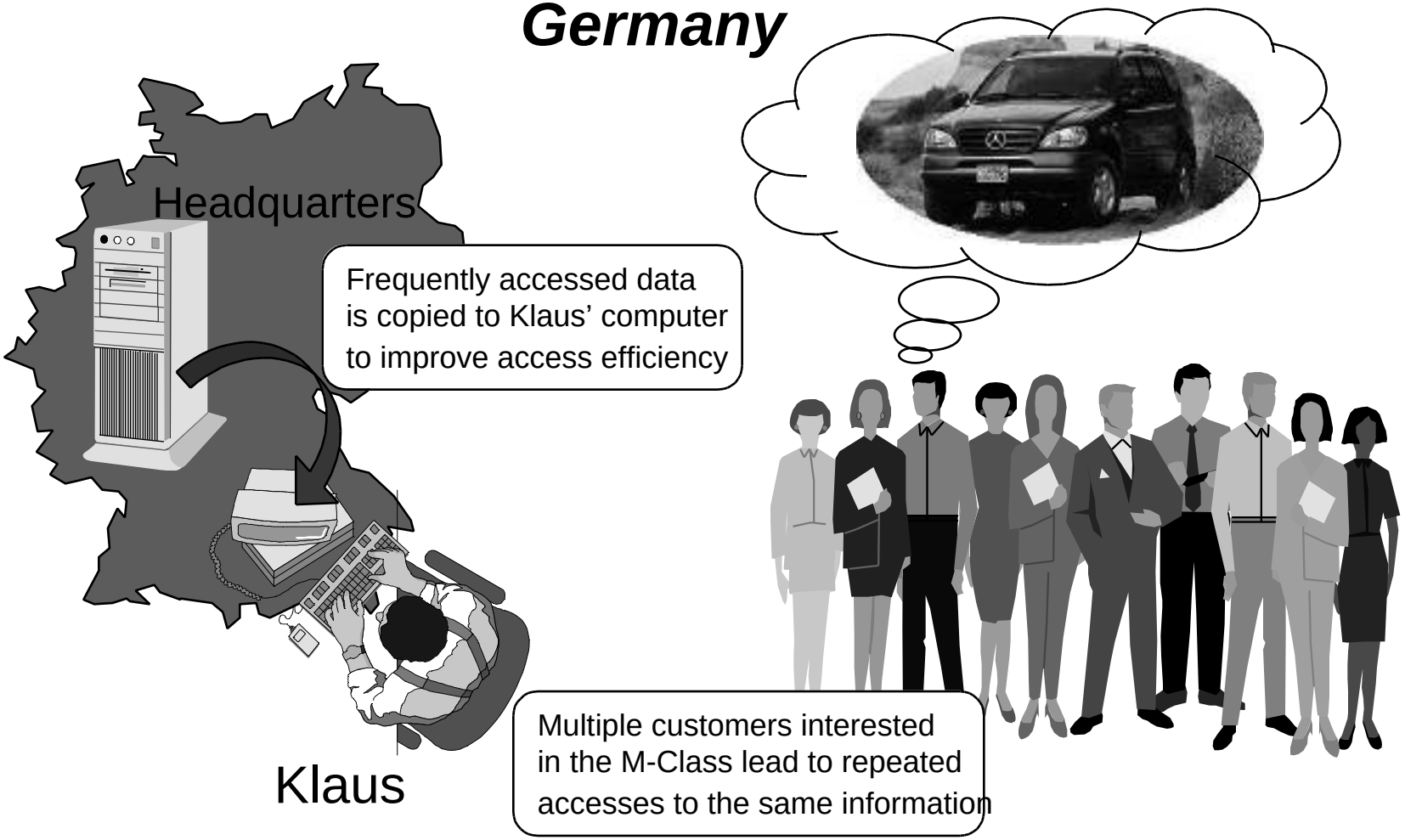
# *Scenario 3: Dealer´s workshop at 8am*



# *Scenario 3: Dealer´s workshop at 8am*

- **It´s 8 o´clock in the morning. A long line of customers are waiting to get served at Sam´s workshop. The aftersales database at MBNA is under heavy load.**
  - The response time is so slow that Sam has to ask his customers to be patient. ***The customers get angry.***
- **Bratt is opening his dealership at the same time. He also has a long line of customers impatiently waiting to get service.**
  - When he starts up the PAID enabled STAR NETWORK system, he is asked whether he wants to update his local database. He doesn´t want to add any load on the network while his customers are waiting, so he decides to delay the update and ***serves his customers right away.*** Later in the morning, when his business has calmed down, he is asked again, and now he decides to update his database.

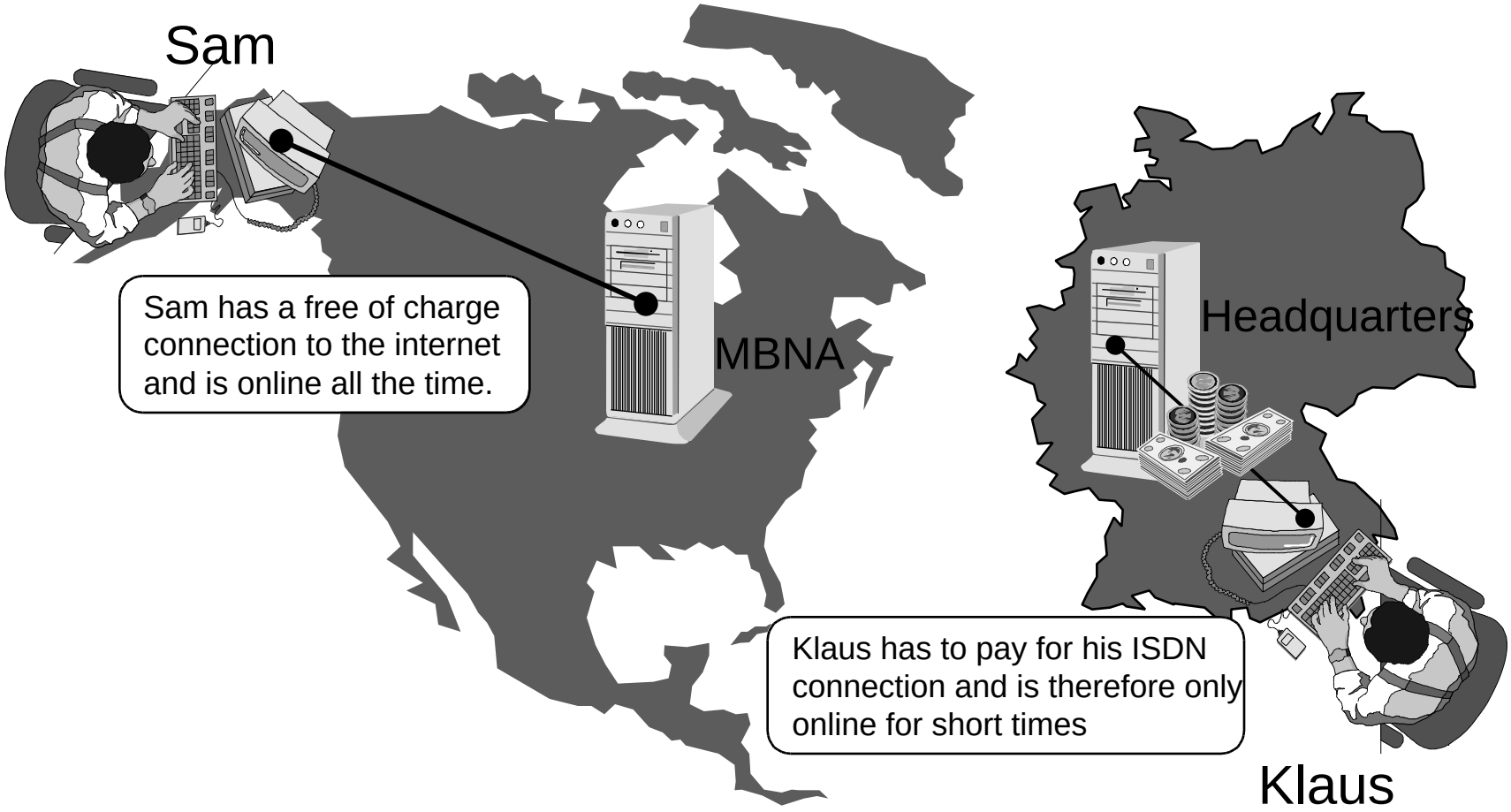
# *Scenario 4: Introduction of the M-Class in Germany*



# *Scenario 4: Introduction of the M-Class in Germany*

- **Klaus, who doesn´t have the data for the new M-Class in his local database, has to access the data remotely.**
- **Serving customers he has to access the same data, and experiences that the response is faster and faster because more parts of the data are cached locally.**
- **After some days of repeated accesses, the PAID enabled STAR NETWORK system asks him whether he wants to copy the data for the new M-class into his local database.**
- **Klaus says yes, and is happy to learn that this also guarantees that all necessary updates in the future are done automatically.**
- **After this initial update only incremental updates for the M-Class are send to his machine.**

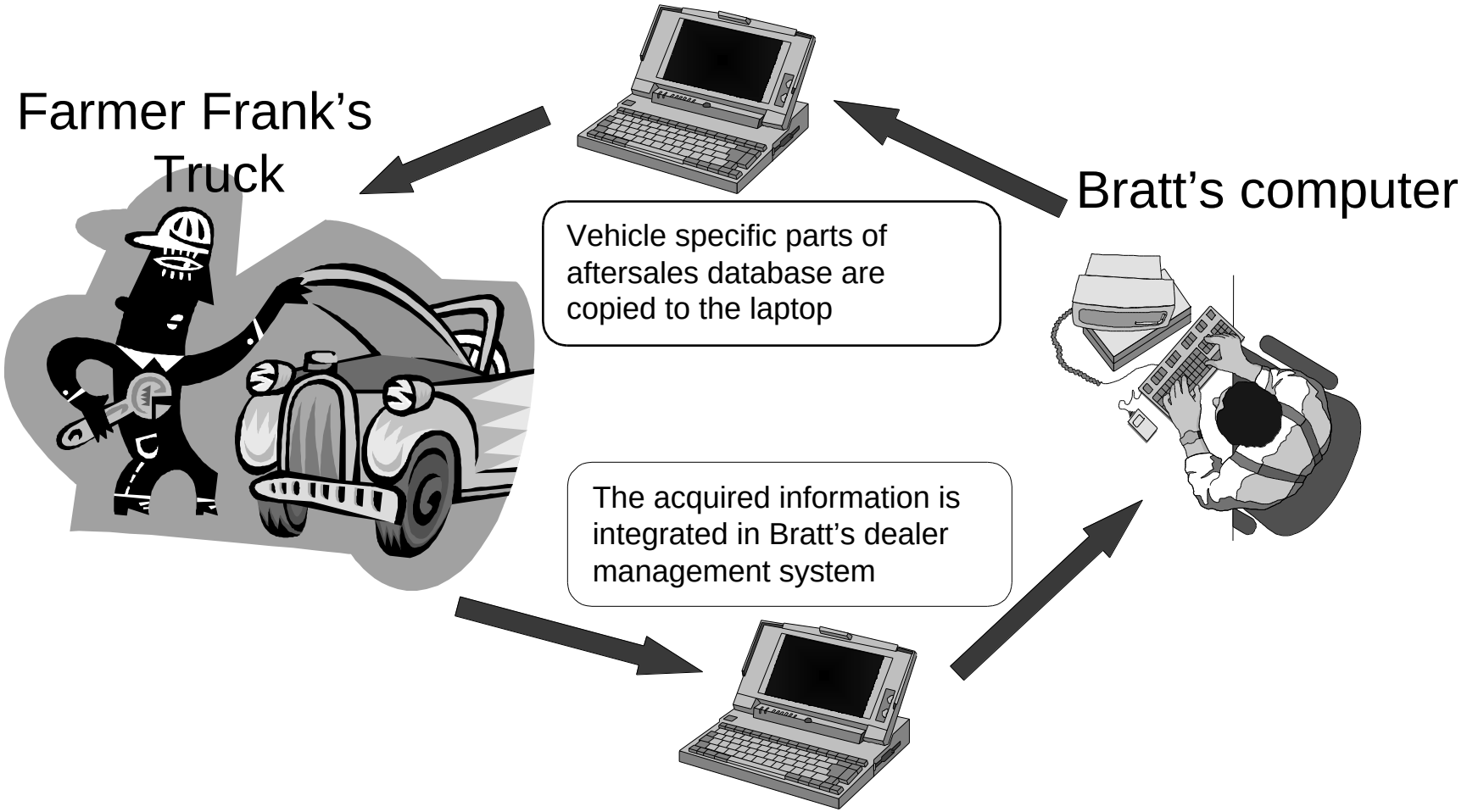
# *Scenario 5: Minimizing connection costs*



# *Scenario 5: Minimizing connection costs*

- **Sam has a free of charge connection to the internet using his Bell Atlantic local phone number.**
  - He decides to be online all day long, because he does not pay anything to access all the data remotely.
- **Klaus cannot afford to be online all the time because he has to pay for each second he uses his 64KBit ISDN dial-up line.**
  - With the PAID enabled STAR NETWORK system, he connects to the internet only for short times, synchronizes his data or accesses data for infrequently needed information, for which he doesn´t want to waste space in his local database.

# *Scenario 6: "Mobile Garage"*



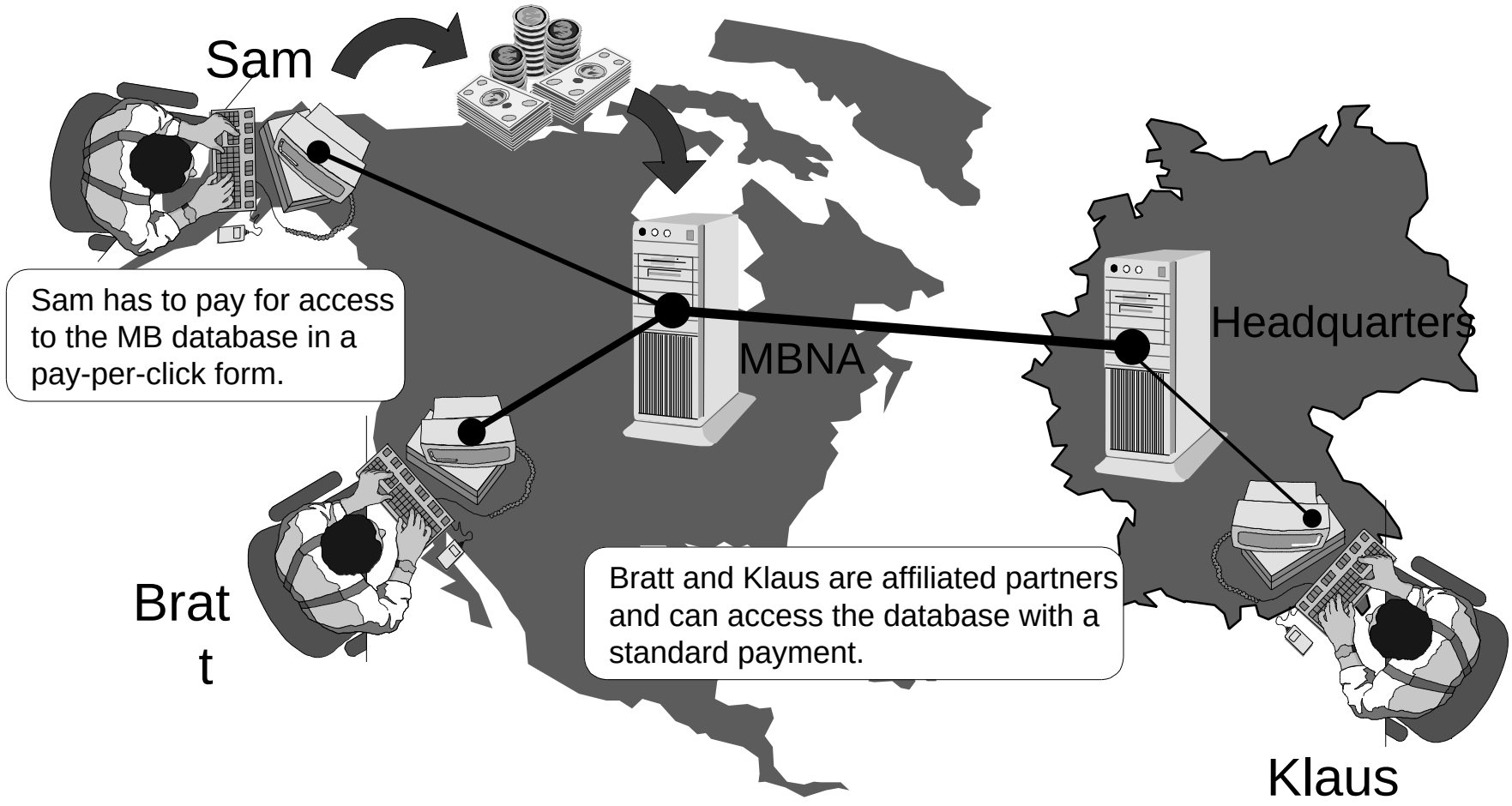
# *Scenario 6: "Mobile Garage"*

- **Bratt receives a phone call from Frank Farmer. Frank lives far outside of Beverly Hills and his truck is broken down. He needs the truck for his harvest and the weather forecast for the next week is bad, so he asks Bratt for a fast repair.**
- **Bratt activates his laptop and connects it to the computer in the workshop. He selects the service, parts, and diagnosis information belonging to Frank's specific truck and gets an extract of the database installed on his laptop. Due to the limited storage capacity of the laptop, Bratt is asked either to remove some other, yet not necessary information manually or to let this be done by the system automatically. He selects the "automatic" option.**

# *Scenario 6: "Mobile Garage" (continued)*

- **Bratt asks his mechanic Steve to go to Frank Farmer to diagnose the problem. Willy takes the laptop and after several test with the diagnosis system it becomes clear that one of the ECU's is broken.**
- **Steve searches for the appropriate part number in the electronic parts catalog on his laptop and suggests Frank to install a new ECU.**
- **Back in the garage Steve reconnects the laptop with the computer in the garage and the ordering information for the ECU is integrated into the dealer management system.**

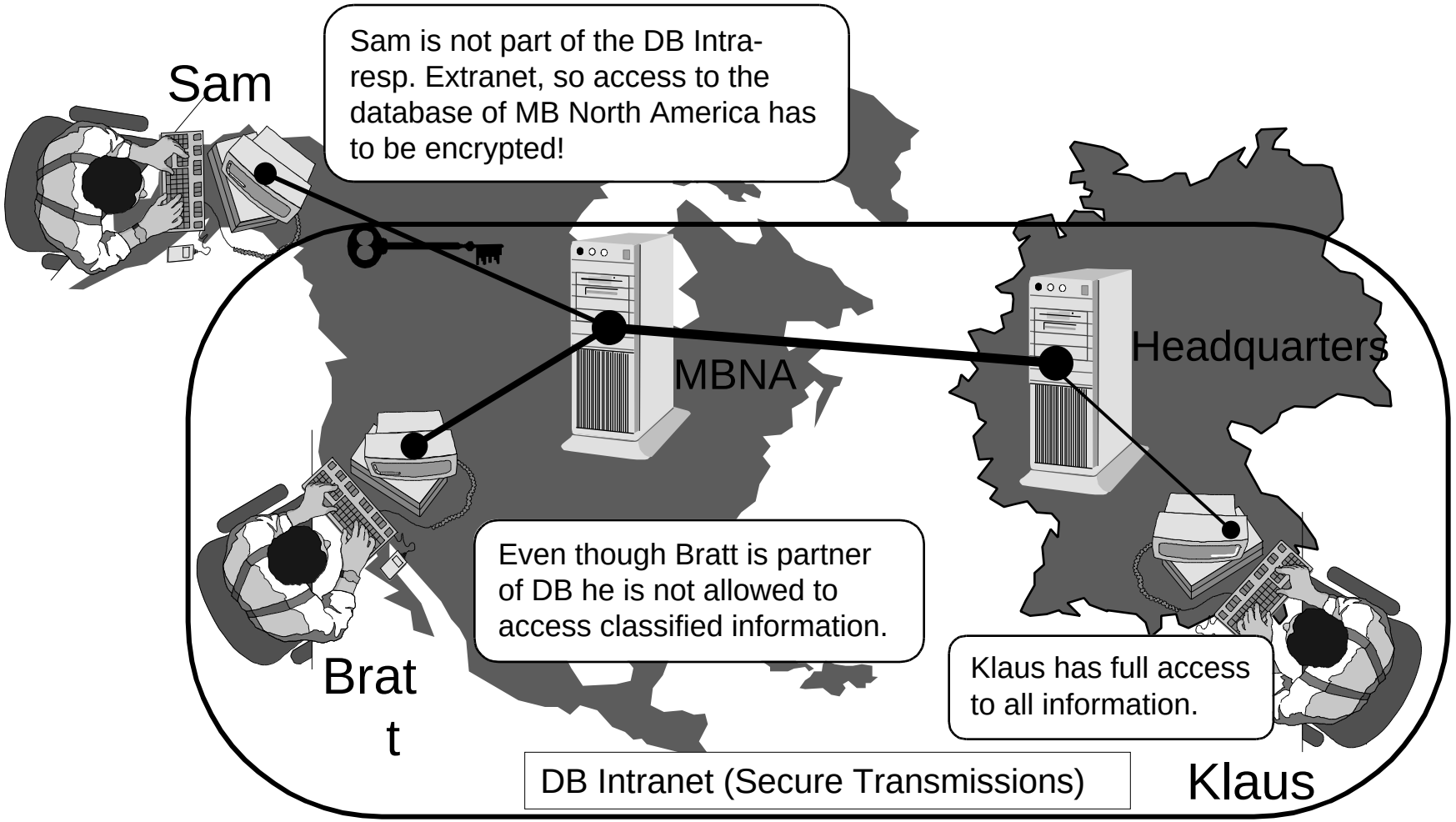
# *Scenario 7: Billing*



# *Scenario 7: "Billing"*

- **Not every dealer is an affiliated partner of Daimler-Benz**
- **Independent dealers like Sam pay for the access to the aftersales database.**
- **PAID provides accounting mechanisms that allow different forms of billing such as per-pay-click or flat rates.**

# *Scenario 8: Security*



# *Scenario 8: Security*

- **Independent dealers like Sam are not directly connected to Intra- resp. Extranet. Transmissions to and from third-party dealers have to be encrypted.**
- **Information within the aftersales database belongs to different security classes and can only be accessed by certain user groups.**
- **Different security mechanisms such as encryption and authentication have to be supported depending on the accessed information.**

# *PAID Requirements*

- **Hierarchical Caching**
- **System Architecture is**
  - Open
  - Extensible
  - Scalable
  - Robust
- **Decentralized Management**
- **Push/Pull-Mode**
- **Integrated Version Management**

# *Summary*

- **Incremental updates:**
  - Only new or modified data is transmitted
- **Supports disconnected mode:**
  - Mobile computing
  - Insensible to unreliable network connections
- **Customizable to the needs of the users:**
  - Automatic and/or manually initiated updates
  - Customized local databases
- **Transparency of medium:**
  - Networks, CD-ROM, satellite-based broadcast
- **Easy to operate**

# *Target Environment*

- **Database & Application Server @ Daimler-Benz Headquarters in Stuttgart**
- **Database & Application Server @ Mercedes-Benz North America**
- **Client @ Mercedes-Benz Dealership in Pittsburgh**

Access to Headquarters and selection of the dealer and MLC have to be determined during the requirements analysis phase.

# *Deliverables*

**The main focus of PAID is on the *architectural vision*, implemented as a *conceptual prototype.***

- **Requirements Analysis Document**
- **System Design Document**
- **Object Design Document**
- **User Manual**
- **Test Manual**
- **Conceptual Prototype Demonstration on Dec 10, 1998**
  - Worldwide Videoconference with DB Headquarters

# *Procedure for Client Acceptance Test*

- **Functionality to be demonstrated must be determined during requirements analysis.**
- **Acceptance criteria can be negotiated between customer and developers after the end of the requirements analysis.**
  - Must be based-lined in Project Agreement

# *Questions?*

- **While I am  at CMU, drop by my temporary office in WeH 4123 to talk to me about the project and its requirements.**
- **Starting next week (Monday August 31, 1998), post questions on the Client Discuss database and somebody will respond within 24 hours.**
  - http://amefs.srv.cs.cmu.edu/PAID/ClientDi.nsf
- **Do not send  e-mail!**