Smart Cards & Retailers

Payment Systems and Application Drivers

October 22, 2002

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IBM Global Smart Card Solutions

Solutions for things that link and think

1

Agenda

- **Smart Card Solutions**
  - What are they?
  - Why are businesses adopting smart card solutions?
- **Smart Card Market today**
  - What are the drivers?
  - Who are the players?
- **IBM's Smart Card Strategy & Solutions**
  - What are our offerings?
  - How do I identify and qualify opportunities?
- **Back up information and resources**

How do they work?

ID

STORED VALUE

PROFILE

Payment applications

A chip embedded under a contact plate with OS, keys, applets, and EEProm is the heart a multi application smart card.
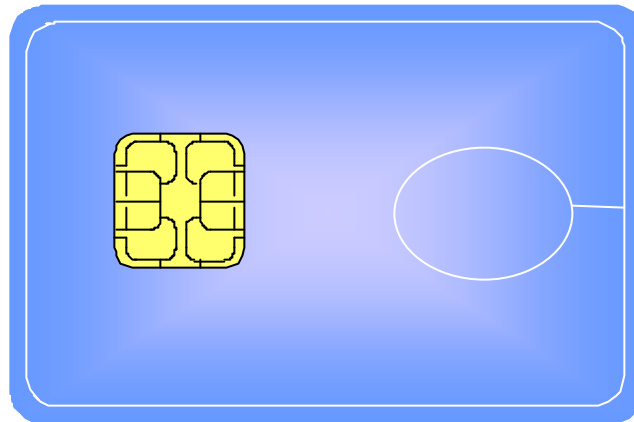
**Read by a PC
Cash machine
Point of Sale
Scanning device
Mobile Phone
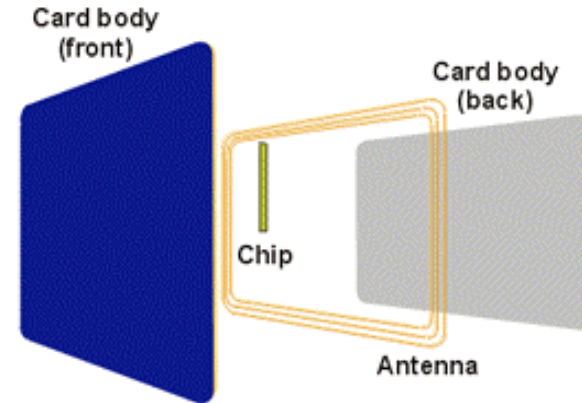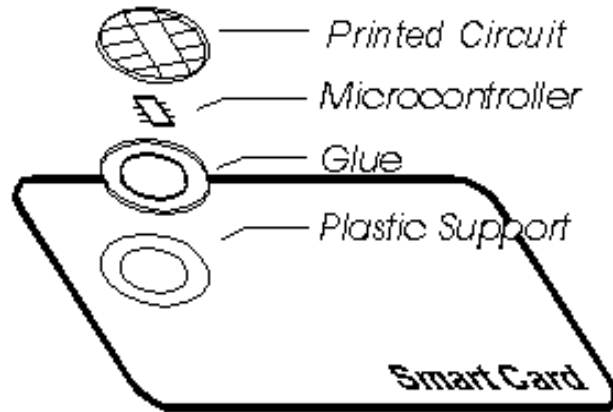Kiosks
Vending
Set Top Boxes**

Functions are loaded into the chip

A contact card is the most common form but *contactless* smart cards with inductive power are now available with the same functionality.

3

Contact & Contactless ICCs
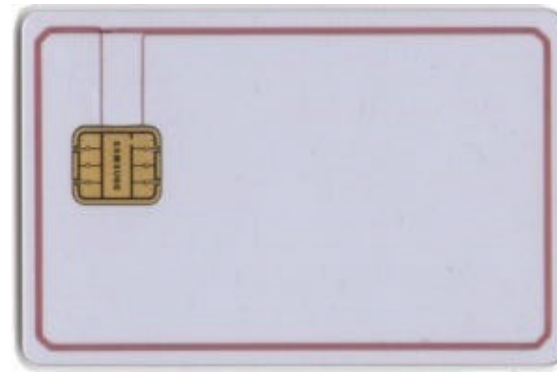

Printed Circuit
Microcontroller
Glue
Plastic Support

Smart Card

Card body (front)

Card body (back)

Chip

Antenna

Source: Gemplus - All About Smart Cards

Cards are excellent for bundling several technologies on a single piece of plastic

Basic Principals of Smart Cards

- Extensive information storage
- Off-line applications
- Rich security
- Ability to combine multiple functions on one card (silicon, mag stripe, & plastic)
- Reliability and extended life
- Integrate to almost all legacy systems
- Facilitates business partnerships, alliances, cross organizational uses

So what value do they bring to business?

- I'm a bank
  - Fraud reduction
  - Merchant acquiring strategy
  - Portal strategy
- I'm a retailer
  - Reduction in Merchant Fees
  - Loyalty – customer retention/ CRM
  - Payment/gift cards,
  - co-branding
- I'm a government
  - Public access to information
  - National ID
- I'm a health care provider
- I'm a large employer
- I'm a Telecom

Highlights of the Smart Card Marketplace Today

- ID and Authentication is Top of Mind (Govt ID)
- low cost cards, readers, and development tools readily available (secure payment chips < $1)
- stable open (Java) and proprietary operating systems available
- 32K (+) EEPROM and 16 bit processors support more complex applications
- smart card-ready PCs, browsers, readers help to make applications plug-n-play
- GlobalPlatform becoming an industry standard
- more market awareness and experience (AMEX, Visa, MasterCard……Brittney?)
- cool, competitive advantage, visibility
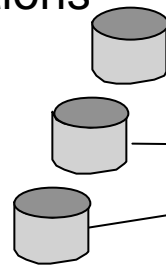
Launches in the Market Today

- American Express "BLUE" card success
- Visa Launches a competitive response
  - Fleet Bank
  - First USA
  - Providian
- Visa's *Target Stores* Co-branded card addresses the merchant acquiring side…..everybody's watching
- MasterCard and Citibank launch
- "EMV" the EMEA buzz word
- DoD, Common Access, Homeland Security….govt chip initiatives
- Chain retailers, most segments, looking for differentiation and the business case

The Smart Chip Solution Opportunity

> *"...a **billion people** interacting with a **million e-businesses** with a **trillion intelligent devices** interconnected ..."*
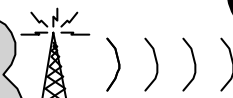>
> *(L.V.Gerstner)*

Content and Applications

Multiple Device Types & Venues

In Vehicle

Commercial
- IAD
- Commercial Gateway
- WWP

In Home
- SetTop Box
- WWP
- Home Gateway
- IAD

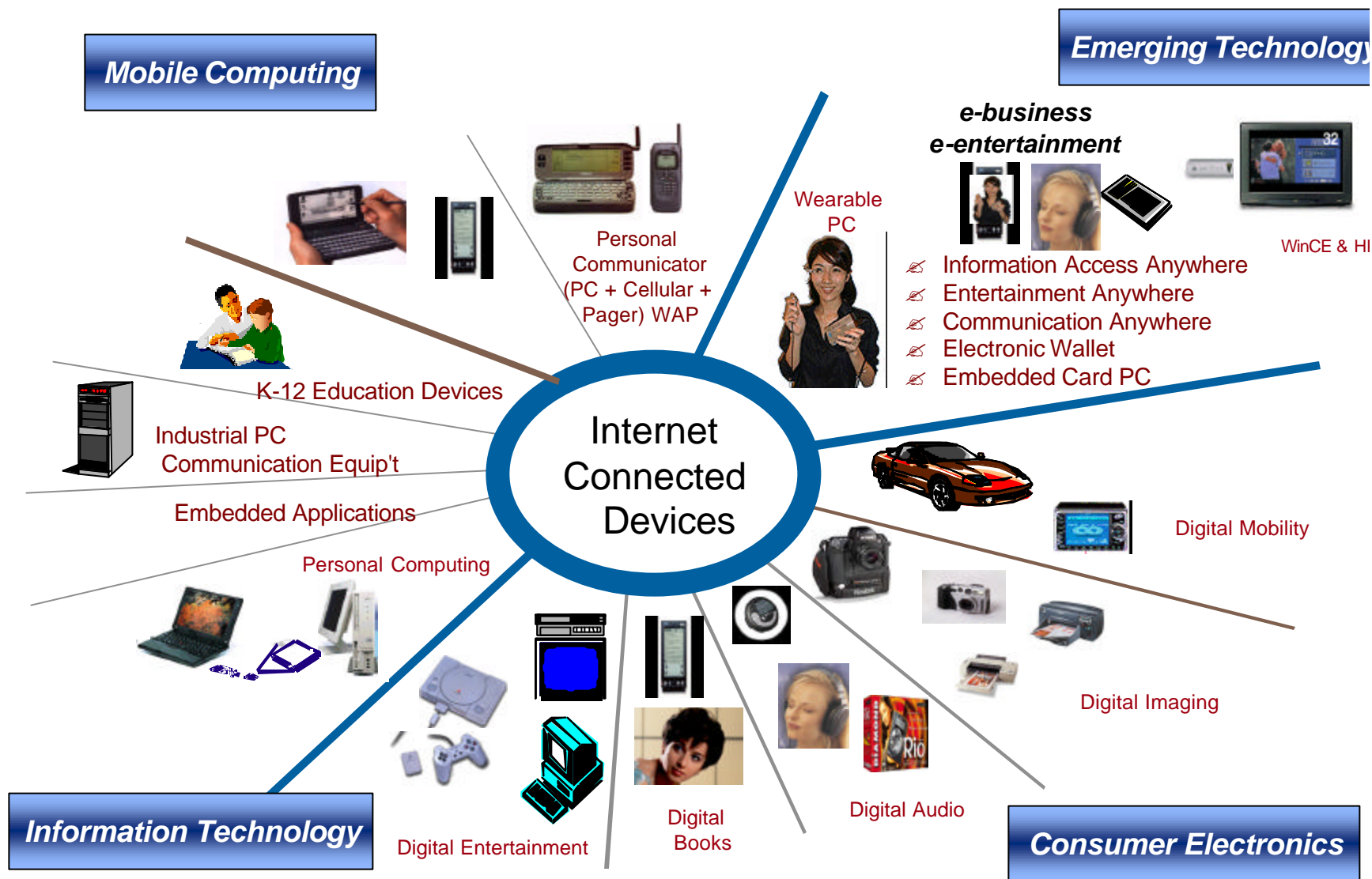Multiple Networks

- The variety and number of devices with intelligent chips to provide wireless/pervasive functionality has continued to grow
- **Management and Operational Services for this mega infrastructure are becoming the critical market need** – **and IBM Opportunity**
- IBM can capture this opportunity with compelling customer propositions

e-business

IBM

Smart Chip Devices

Mobile Computing

Emerging Technology

e-business
e-entertainment

WinCE & HI

Personal Communicator (PC + Cellular + Pager) WAP

Wearable PC

- Information Access Anywhere
- Entertainment Anywhere
- Communication Anywhere
- Electronic Wallet
- Embedded Card PC

K-12 Education Devices

Industrial PC Communication Equip't

Embedded Applications

Personal Computing

Internet Connected Devices

Digital Mobility

Digital Imaging

Digital Audio

Digital Books

Information Technology

Digital Entertainment

Consumer Electronics

11

Global Smart Card Solutions Strategy:

Create Customer Value by Providing Consulting, Systems Integration, Development and Implementation Solutions Through a Combination of Superior Skills, Leading Edge Technology, Application Assets, and Partner Relationships

Build Value Across the Entire
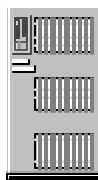Smart Card Business Solution

Vendor scanning, chip requirements, and consulting on chip security requirements

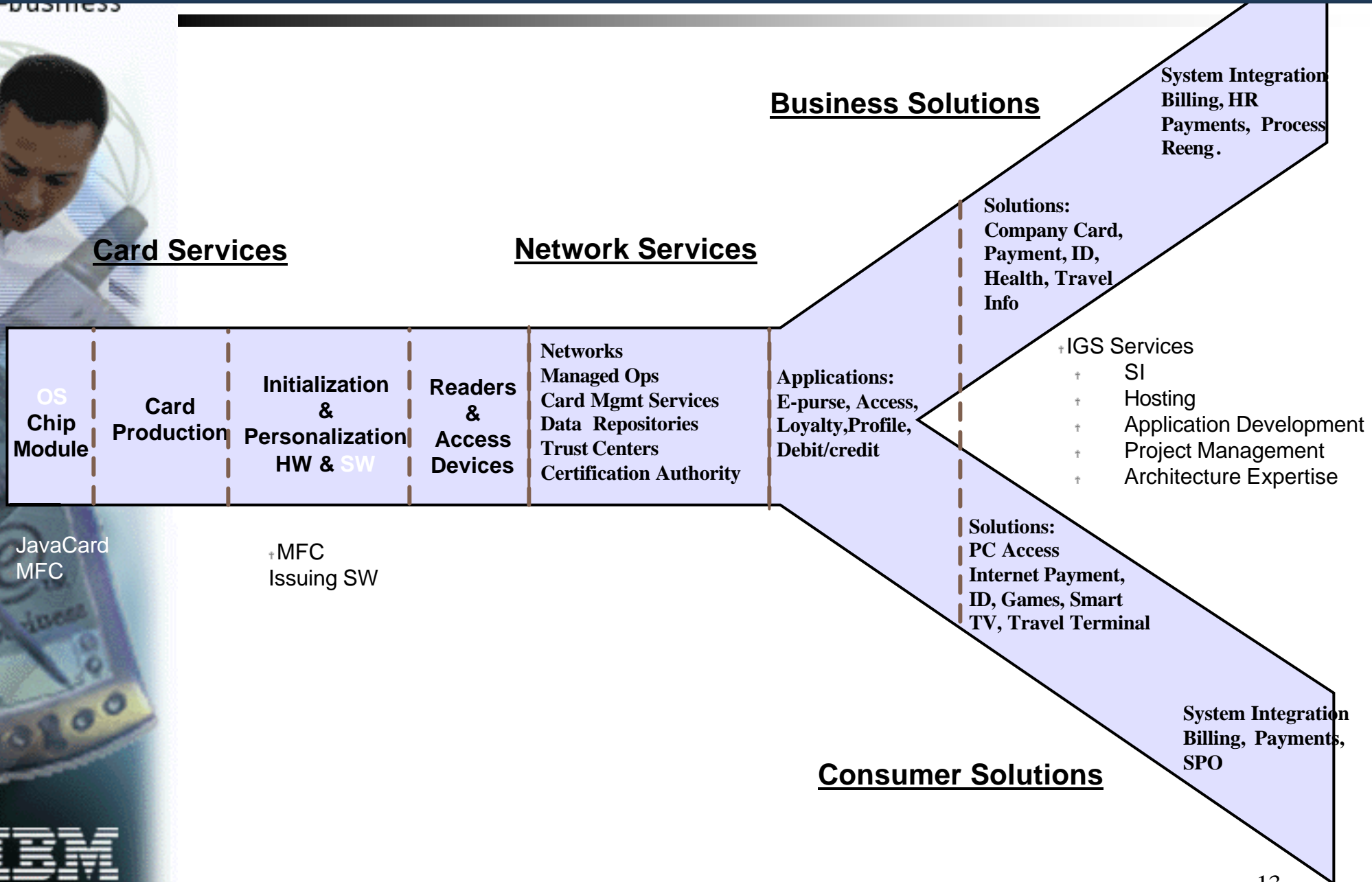Application selection, design, and integration into total business solution

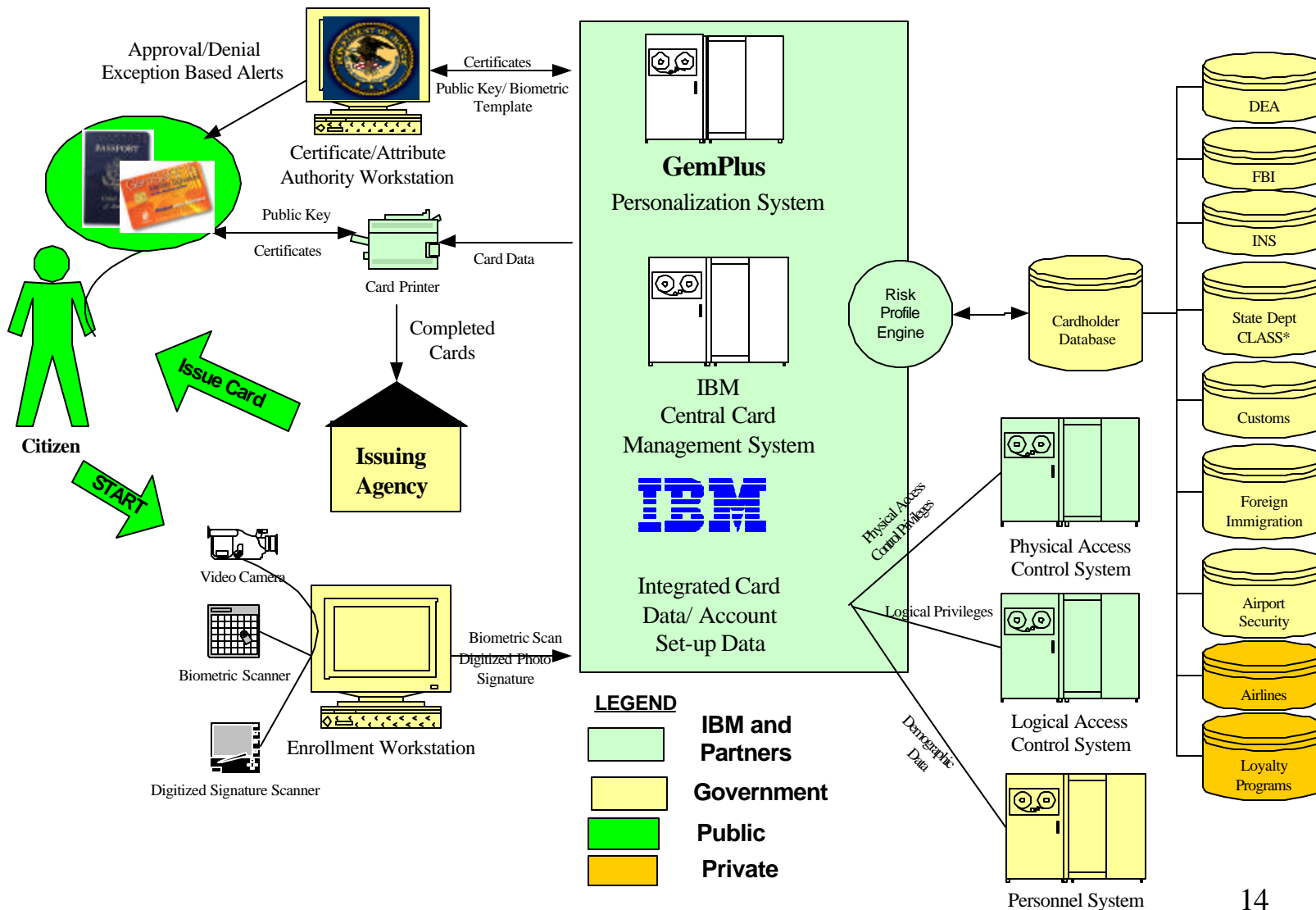Integration services for card production, application management, key generation

Smart card life-cycle management for post issuance updates and replacement

12

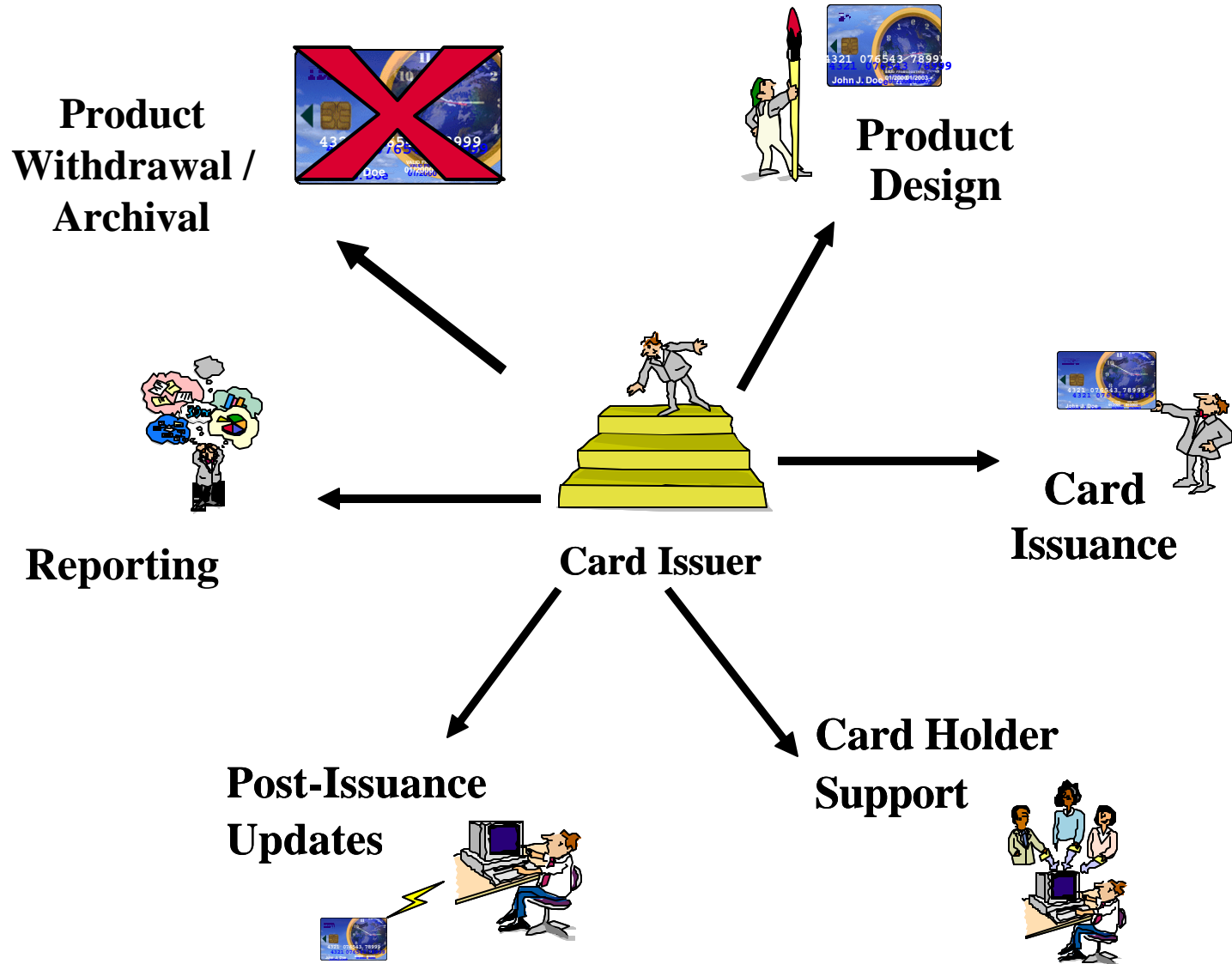# Smart Card Value Chain and IBM Assets

Business Solutions

Card Services　　　　　　　**Network Services**

System Integration
Billing, HR
Payments, Process
Reeng.

Solutions:
Company Card,
Payment, ID,
Health, Travel
Info

OS Chip Module	Card Production	Initialization & Personalization HW & SW	Readers & Access Devices	Networks Managed Ops Card Mgmt Services Data Repositories Trust Centers Certification Authority	Applications: E-purse, Access, Loyalty,Profile, Debit/credit

† IGS Services
- † SI
- † Hosting
- † Application Development
- † Project Management
- † Architecture Expertise

JavaCard
MFC

† MFC
Issuing SW

Solutions:
PC Access
Internet Payment,
ID, Games, Smart
TV, Travel Terminal

System Integration
Billing, Payments,
SPO

Consumer Solutions

13

IBM Secure Identity Solutions for e-Business

General Public	Government	IBM Solution	IBM/Govt	Misc. Databases

Approval/Denial
Exception Based Alerts

Certificates

Public Key/ Biometric
Template

Certificate/Attribute
Authority Workstation

Public Key

Certificates

Card Data

Card Printer

Citizen

Issue Card

START

Completed
Cards

Issuing
Agency

Video Camera

Biometric Scanner

Enrollment Workstation

Digitized Signature Scanner

Biometric Scan
Digitized Photo
Signature

GemPlus
Personalization System

**IBM
Central Card
Management System**

Integrated Card
Data/ Account
Set-up Data

Risk
Profile
Engine

Cardholder
Database

Physical Access
Control Privileges

Logical Privileges

Demographic
Data

Physical Access
Control System

Logical Access
Control System

Personnel System

DEA

FBI

INS

State Dept
CLASS*

Customs

Foreign
Immigration

Airport
Security

Airlines

Loyalty
Programs

LEGEND

	IBM and Partners
	Government
	Public
	Private

14

CMS-*e* is an important strategic IBM asset

- CMS-e (Chip Management System) a life cycle smart card management solution
- Moving from IGS "Solution Asset" to IBM Program Product
- Strategic IBM offering
  - WebSphere based (WESM)
  - DB2
  - MQ
- IBM/TSYS/Gemplus Alliance
  - TSYS implementing CMS-*e* today
  - Alliance Offering - Low cost, low risk, quick implementation of a smart card initiative
  - Target Stores, Providian Bank, and dozens of existing TSYS bank and retail card issuers are investigating

15

IBM's CMSe Smart Card Management Framework

Supports the Entire Smart Card Life Cycle

Product Withdrawal / Archival

Product Design

Reporting

Card Issuer

Card Issuance

Post-Issuance Updates

Card Holder Support

We have offerings and capabilities to address EMV migration requirements!

- What's EMV? (Europay MasterCard Visa)
  - Mandated requirement to move from magnetic stripe to chip on credit cards
  - Standard for smart card based Card and Terminal Authentication and how the application interacts with the card
  - Much more secure than magnetic stripe
  - Must be implemented by 2005 in some geographies (not NA)
- The carrot
  - Reduces fee to merchant because fraud is reduced
  - Major incentives for retailers to install POS equipment and Banks to issue cards
- The stick
  - Puts liability on Merchant for fraudulent transactions

EMV is the biggest change for payment since the move to magnetic stripe from embossed cards

**IBM provides
EMV workshop
Systems Integration
Reseller of Ingenico POS
Custom POS Devices
Upgrade of Acquirer
Software**

**Fierce Competition for
this business
SchlumbergerSEMA**

*New Readers
at every POS*

*New Software
in every POS*

*Acquiring SW
upgrade*

*100's
millions of
smart cards*

*And smart
card
production
machines*

Bank

PoS Application

PoS layer

ICC Reader and PIN Pad

EMV layer — Smart-Switch™ — Authorisation layer

Solve/SE
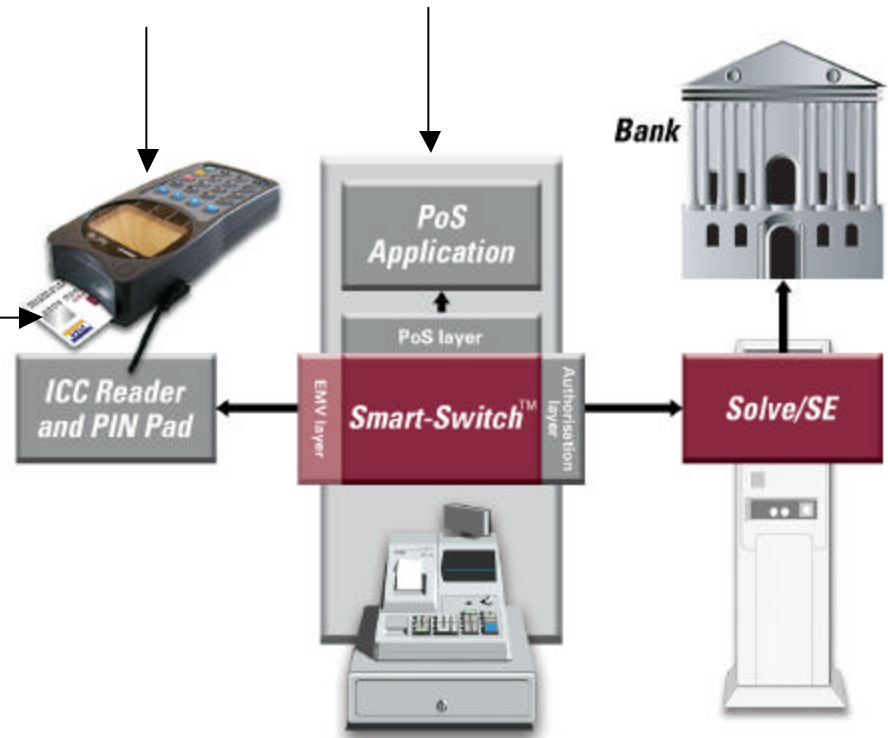
*Plus Services for
Migration Consultancy,
exploitation and
maintenance*

*Upgrade to Card Management
systems*

Adding Value in the end to end solution….

- We have **payment application** solutions for cards, terminals, and servers
  - work with all the bank card associations' applications
  - debit/credit and stored value
- We have **biometric solutions** for cards and terminals
- We have **authentication solutions** for cards, terminals, web servers
- We have an IGS multi merchant **loyalty application**
  - work with Visa's Catuity implementation
  - Welcome Real Time loyalty
- **Develop, test, implement Java applets** for specific proprietary implementation
- **Integrating** IBM and non IBM componentry into an end to end solution

IBM Fusion Technology – Consumer Transaction Terminal

Fuse the power

Traditional Payment

Customer Relationship Tools e.g. advertisement, communications

SmartCard Technology

eCash Tendering
- eSignature
- biometrics

IBM's
Customer Transaction
Terminal
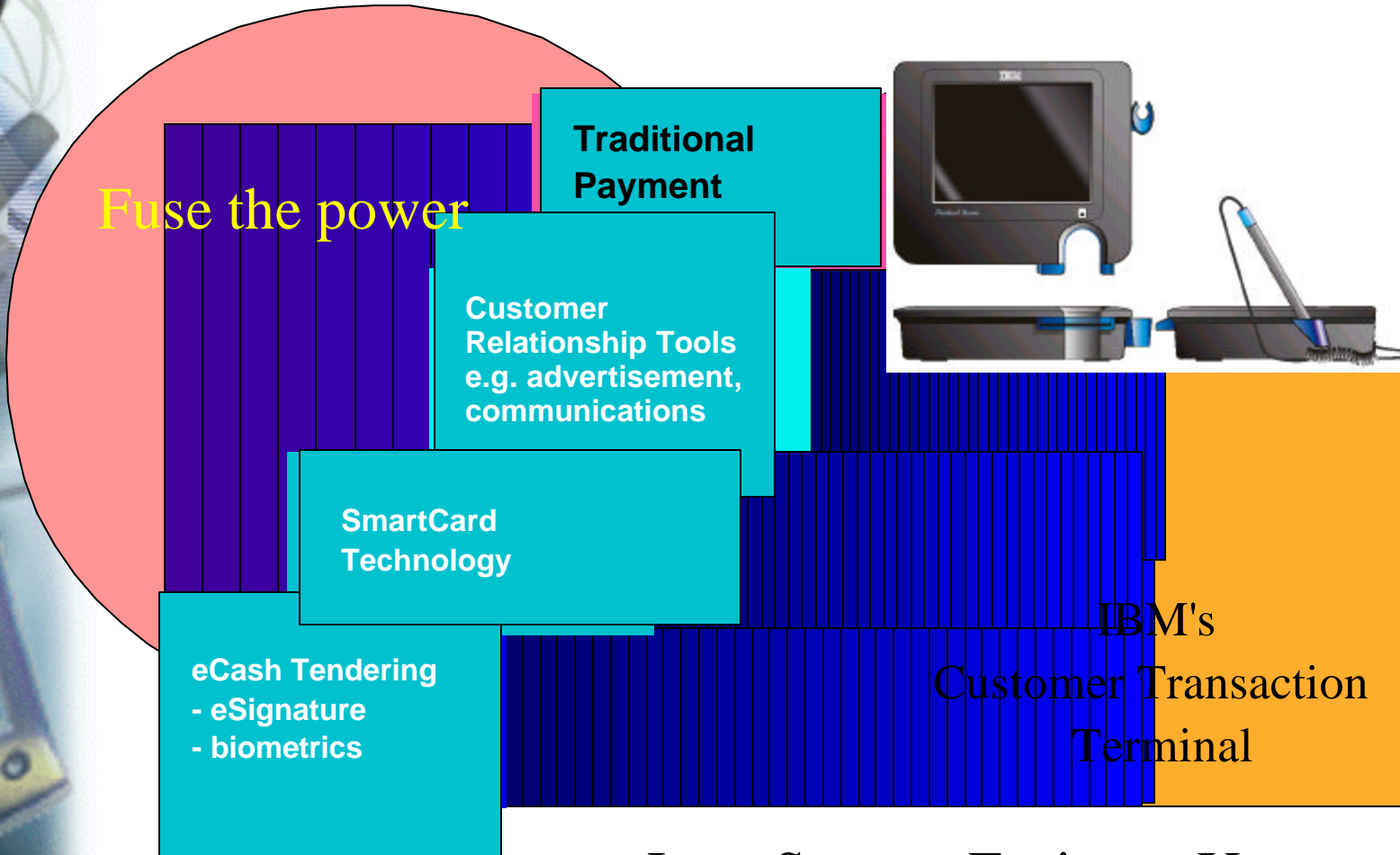
More Power - Less Space - Easier to Use
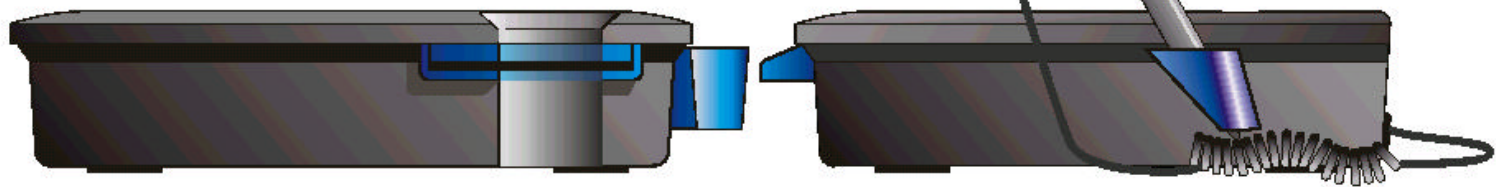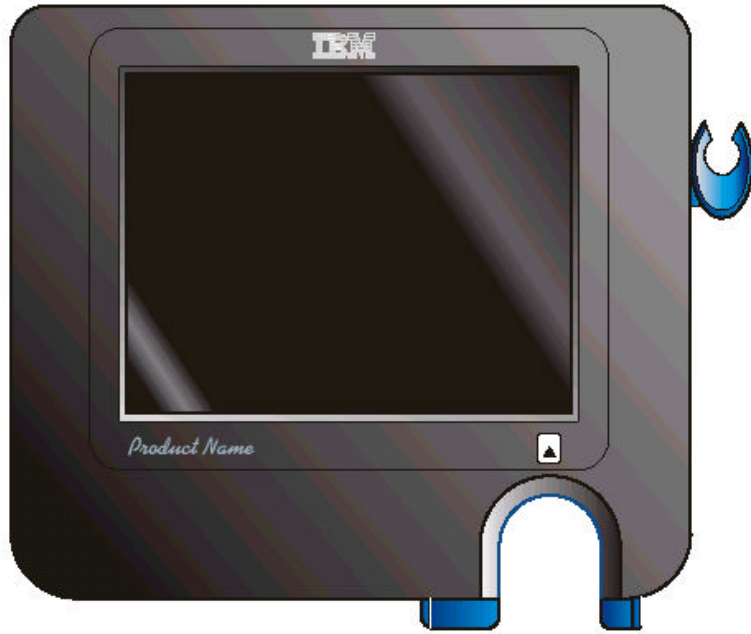
Summary

- Smart Card initiatives are integration opportunities
- IBM has broad capabilities in all areas in and around smart chip solutions from chip OS to life cycle management
- IBM has products, offerings, and assets to integrate for the "end to end" solution
- IBM Global Smart Card Solutions has relationships and alliances with most major technology suppliers
- Most smart card initiatives will require "Team IBM"
  - Retail Sector - hw, sw, services, and business partners
  - Banking Sector - relationships, payment systems, services
  - Security and Privacy Practice
  - Global Smart Card Solutions
  - Business and Alliance Partners

- Everyone is interested in this technology!
- An inexpensive Solution Design Workshop can serve as a feasibility test.
- The sell cycle can be long, it will take stamina.
- BEWARE! The Business Case Question
  - respond "customer value prop"
  - **Ultimately the Biz Case is: Acquire and Retain customers**

- Multi application smart cards are about partnerships. Who are the stakeholders?
- What is the Business problem to solve?
- What is the real motivator?
  - True innovation
  - Competitive Threat
  - Process improvements
  - or just kicking tires!

Basic Qualification Criteria

- What is the nature of their card business today?
  - Proprietary credit card or gift cards?
  - Co-branded bank card?
  - in-house or outsource?
- Do they have funding? What's the process?
- Is there an RFI or RFP in process?
- Is Visa or MasterCard "sponsoring"?
- What applications do they envision?
- What infrastructure do they currently have installed?
  - Chip card readers at POS?
  - Kiosks?
- Who called? IT, Oprns, Mktg, Exec…..
- Is there a Senior Executive champion?
- Can all the stakeholders be identified?

Who to call…..

AG:

Mike Weekes (919-543-0514) Michael Weekes/Raleigh/IBM@IBMUS
David Asay (801-328-6653) David Asay/Salt Lake City/IBM@IBMUS

EMEA:

Paul McKeown (44-20-88185526) Paul McKeown/UK/IBM@IBMGB

AP:

Heiner Cuhls (65-6418-4679) Heiner Cuhls/Singapore/IBM@IBMSG
Brian Kent (61-412-289-211) Brian E Kent/Australia/IBM@IBMAU

Want to know more about Smart Cards?

A few websites with information, white papers, and links:

Smart Card Alliance
www.smartcardalliance.org

GlobalPlatform
www.globalplatform.org

IBM Intranet
http://w3-3.ibm.com/wireless/pvc.nsf/ContentDocsByTitle/Internal+Sales+Tools

Want some interesting non-IBM insight?

Following slides are industry and partner information that may have interest. We should not use these slides outside IBM.

MasterCard International views and strategy

Visa International's overview of US market

MasterCard is the Global Smart Card Leader

✝ At YE'01, **115 million** MasterCard? -, Maestro? -, Mondex? -, and Clip? -branded cards had been issued worldwide

   ✝ **Already 10% of total MasterCard card base**

   ✝ **98 members in 32 countries**

   ✝ **Over 73% carried value-added applications**

Global Smart Card Strategy

- To facilitate smart card deployment in keeping with the essential drivers in national markets, while also taking steps necessary to ensure global interoperability
    - ✝ Work with members to define project scope and emphasize customized solutions
    - ✝ Credit/debit networks are chip-ready
    - ✝ "*One*SMART Card. More Smart Choices."
        - Only MasterCard supports all major smart card platforms
        - Application suite includes credit,   debit, authentication, loyalty,   e-ticketing, e-couponing, stored   value, data storage
    - ✝ Active participation in standards bodies
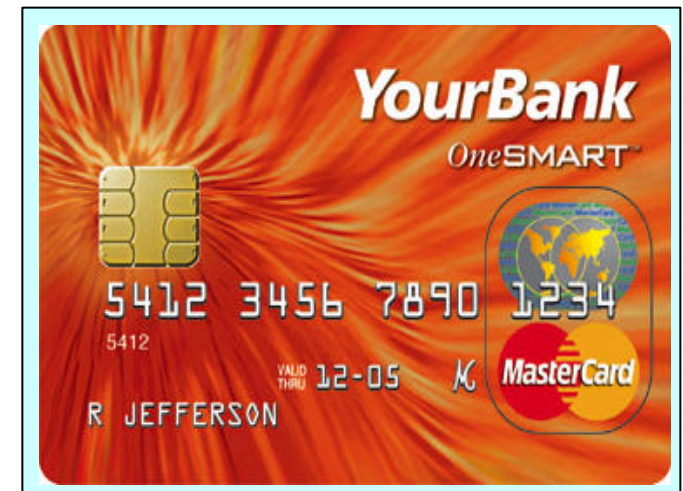
Looking Ahead

Based on opportunity for e-GDV growth, we will continue to focus on:

- † Smart cards
- † Electronic Commerce
- † e-B2B
- † Mobile/Wireless

# MasterCard is a Leader in Internet Security

- MasterCard is committed to providing best-in-class Internet security solutions that protect all parties in a transaction
  - UCAF: a standard, globally interoperable method of collecting cardholder authentication data at the POI across all channels
    - uses simple, hidden fields on merchant web pages, and authentication data generated by issuers to prove cardholder's involvement in an online transaction

MasterCard is a
Leader in Internet Security

- Site Data Protection Service (SDP)
  - A proactive, cost-effective global solution intended to defend against "hack and attack"
  - Identifies vulnerabilities and recommends   improvements
  - Outsourced through industry security
    - Predictive Systems
    - Ubizen
  - Automated enrollment at   www.m
  - Sold to web merchants through
        Acquiring Members
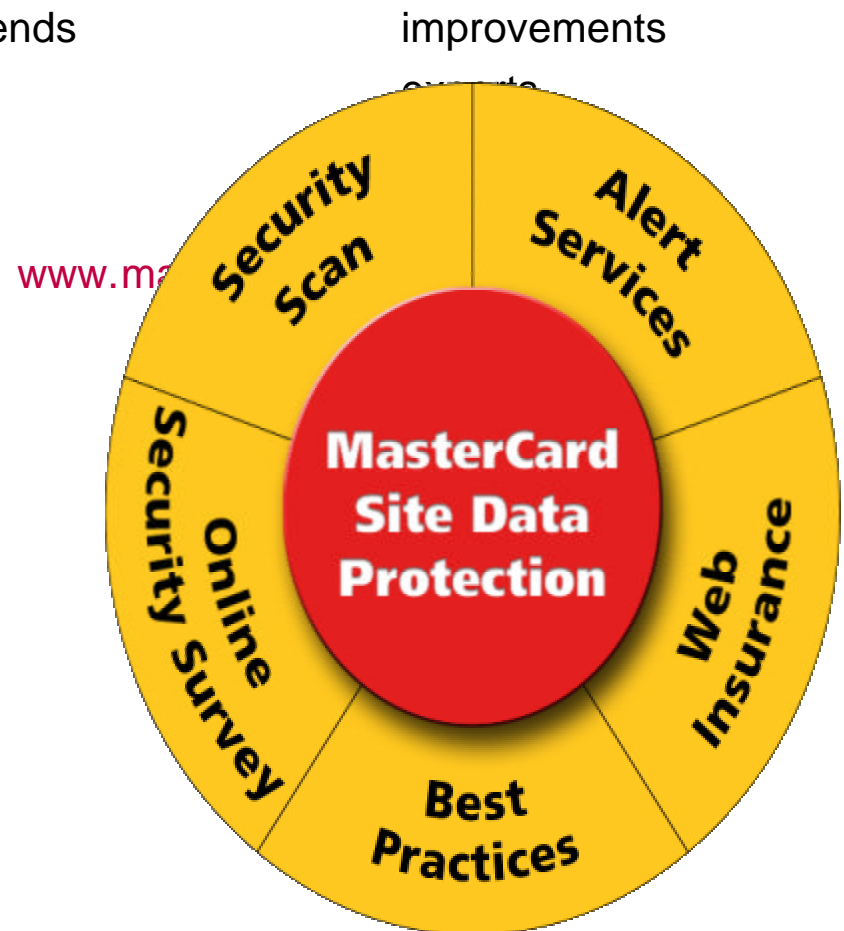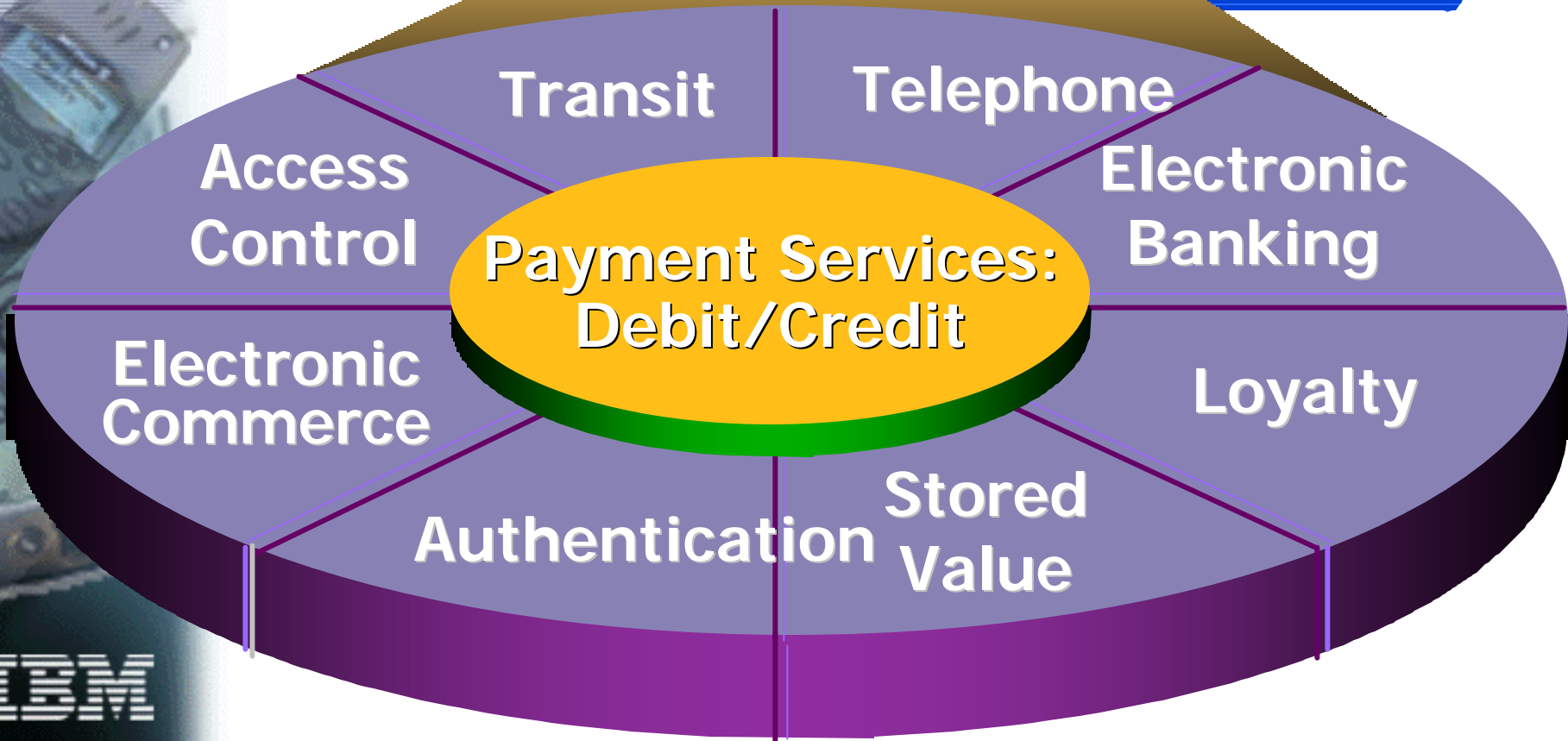
What Visa says about when will it happen?

- Vendors say…"Not soon enough"
- Consumers say…"I don't care about technology"
- Banks say…"When the business case is right"
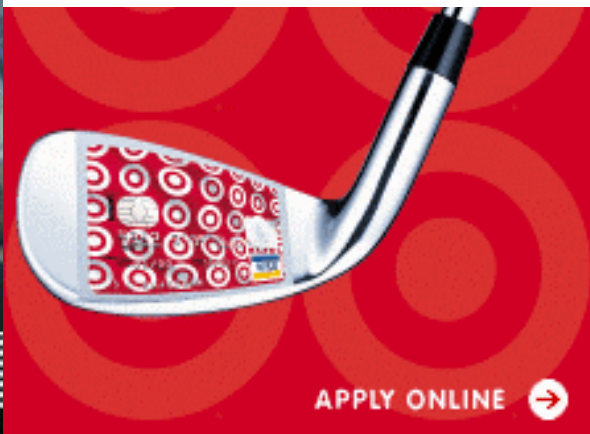- Merchants say…"Magnetic is good enough"

- It took 20 years for chip to come to the international banking world…..
- It takes 5 years to rollout EMV in Europe
- But many banks are starting to take the lead…

34
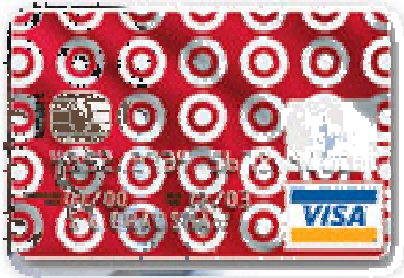
- 4 Members issued cards
  - Target (10 millions)
  - Providian (3 millions)
  - First USA (3 millions)
  - Fleet (Fusion)

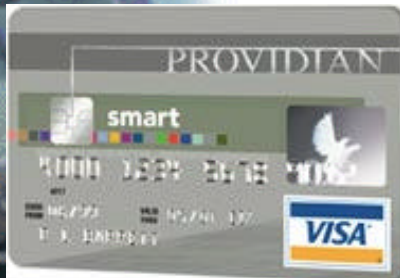# USA

- Target
  - Objective is to increase number of cardholders through Loyalty
  - Applications
    - VSDC
    - Secure internet access – (Verified by Visa)
    - Favourite internet sites
    - Loyalty (Target)
  - Target will upgrade its 10,000 point of sales by end 2003

- Providian
  - Objective is to retain existing customers by value added services
  - Applications
    - VSDC
    - Secure Internet Access
    - Loyalty