The Emerging Infrastructure for Identity and Access Management

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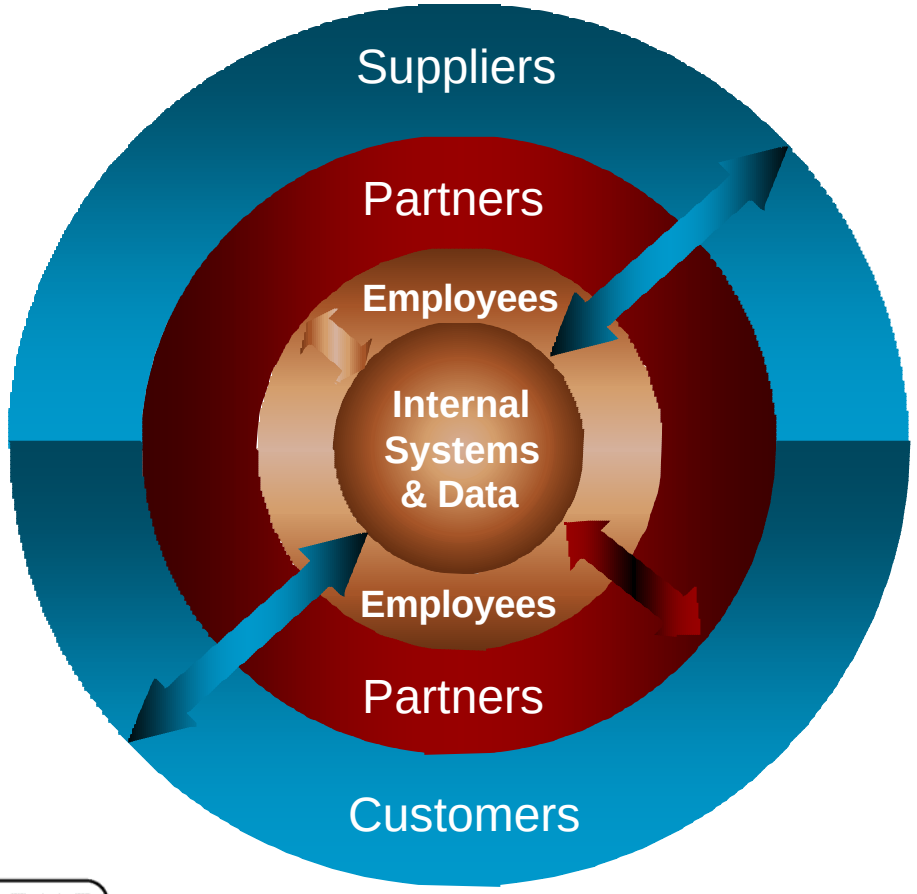
Identity and Access Management

Strategic context: The virtual enterprise network



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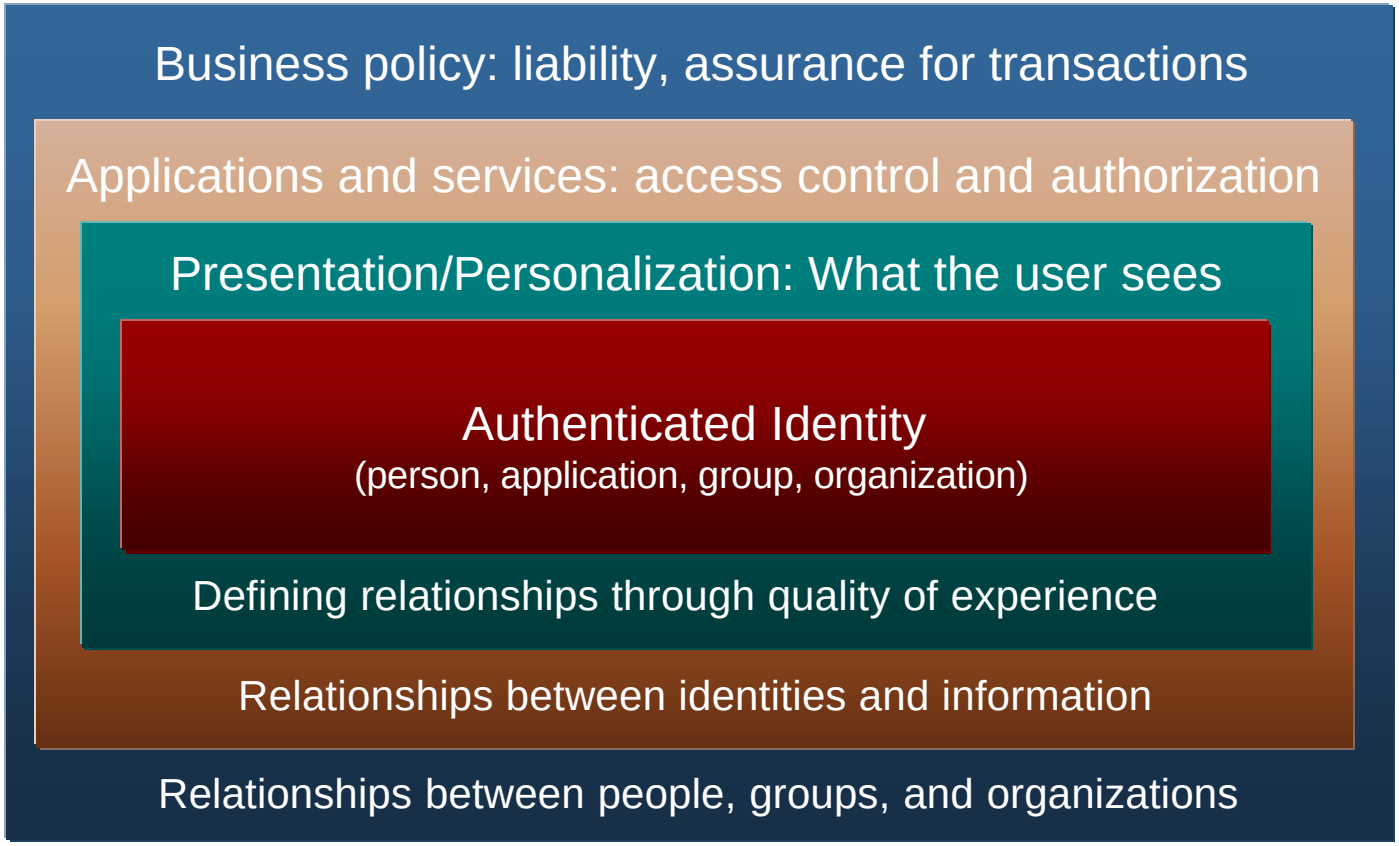
The infrastructure challenge

- The disappearing perimeter turns enterprises inside out
  - Necessitates “opening” the network, creating a dichotomy: more flexible access and stronger security
  - Security must span logical and physical boundaries
  - Apps, databases, OS lack scalable, holistic means to manage identity, credentials, policy across these boundaries
  - Wireless and other devices increase complexity
  - Mistaken desire for “SSO” muddies the water
  - Inevitable intersection of public, private identity structures complicates an already complicated issue
- Legal, social, and regulatory trends raising the bar for protecting networks, identities, brands, and content

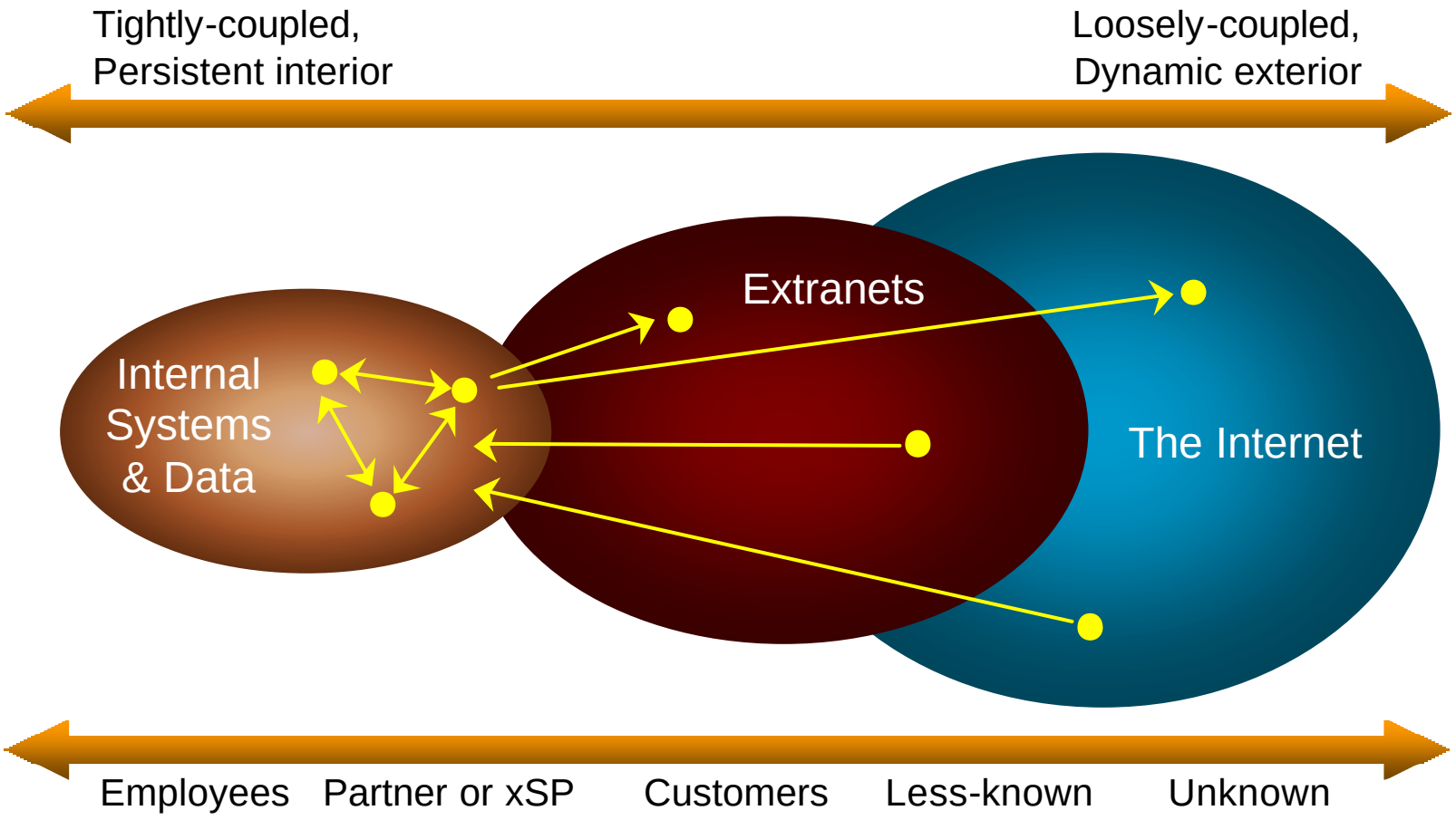
Identity and Access Management

The goal: creating context



Identity and Access Management

The challenge: Interoperability *and* portability



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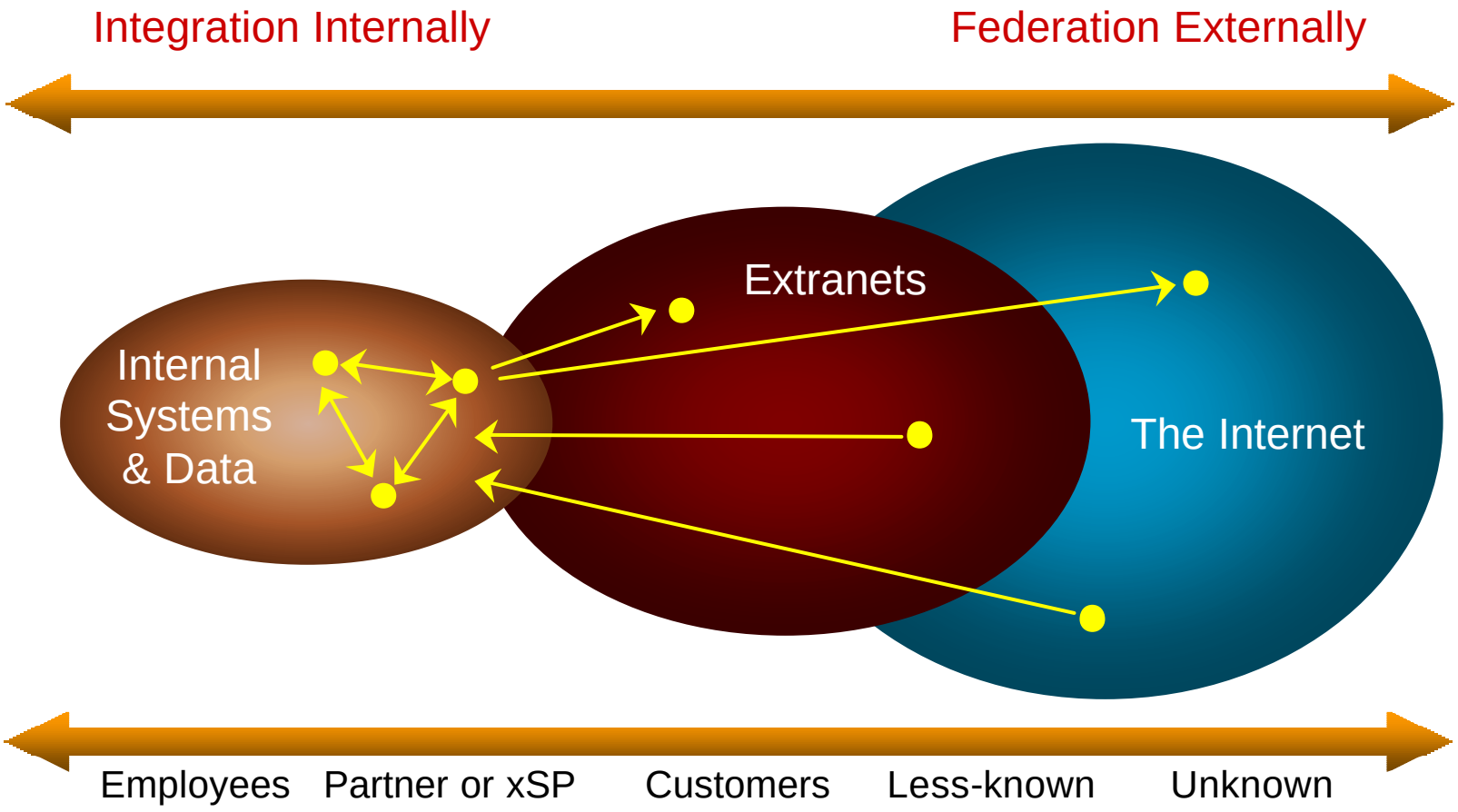
The answer: Flexible infrastructure



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Bottom line analysis

- Identity and access management isn't a "system"
  - It must become a pervasive and federated infrastructure
  - Centralized and decentralized, internal and external
  - But we're a long way from that pervasive infrastructure
  - Standards are only just emerging, don't address all needs
- Vendors are creating integrated product suites
  - Niches remain for innovative standalone products
  - But suites and products must become part of a broader, policy-based enterprise security solution
  - Enterprises solutions must integrate with the world at large
- Enterprises should develop an identity and access management architecture and migration strategy

Identity and Access Management

Agenda

- Business drivers
- Architecture
- Interoperability and portability

Identity and Access Management

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Business Drivers

Opportunities and requirements

- Internally: Lower costs, improve productivity
- Intranet and extranet access to apps; improve value chain efficiency; improve customer service
- Enterprises working to leverage assets—brand, customer base, market presence—to grow, become more efficient
- Meet regulatory requirements: Privacy
  - Lightning rod issue motivating regulations ("opt-out rights")
  - Uneasy balance between personalization and privacy
  - European Data Protection Act creating urgency
- Industries with steep requirements:
  - Petroleum (secure communications across the world), legal services, insurance, manufacturing…

Business Drivers

Opportunities and requirements

- Pharmaceuticals and health services
  - Clinical trials involving patients, doctors, health care professionals; research with partners, universities
  - FDA regulation 21CFR11 requires “signed” electronic records, “validated” development systems; audits, fines
  - Health Insurance Portability and Accountability Act (HIPAA) requires confidentiality of records
- Financial services: consumer, biz-to-bank; bank-to-bank
  - Many laws on banking secrecy, consumer protection
  - Gramm-Leach-Bliley Act, protects the privacy of personal information that financial institutions share with third parties
  - Corporate policies regarding disclosure of consumer info
  - Enforcement by SEC, FTC, other regulatory agencies

Business Drivers

Benefits

- Identity and access management infrastructure enables secure business, enhances intranet security
  - Reduce risk of improper use of IT systems
  - Reduce risk of privacy or other regulatory violations
  - Save money by reducing redundant security admin
  - Accelerate time to market, reduce deployment costs by using general-purpose infrastructure to enable re-use
  - Competitive advantage with new services providing improved quality of experience (QoE) for customers

Bottom line: As an industry best practice, enterprises should develop an identity and access management strategy as soon as possible

Identity and Access Management

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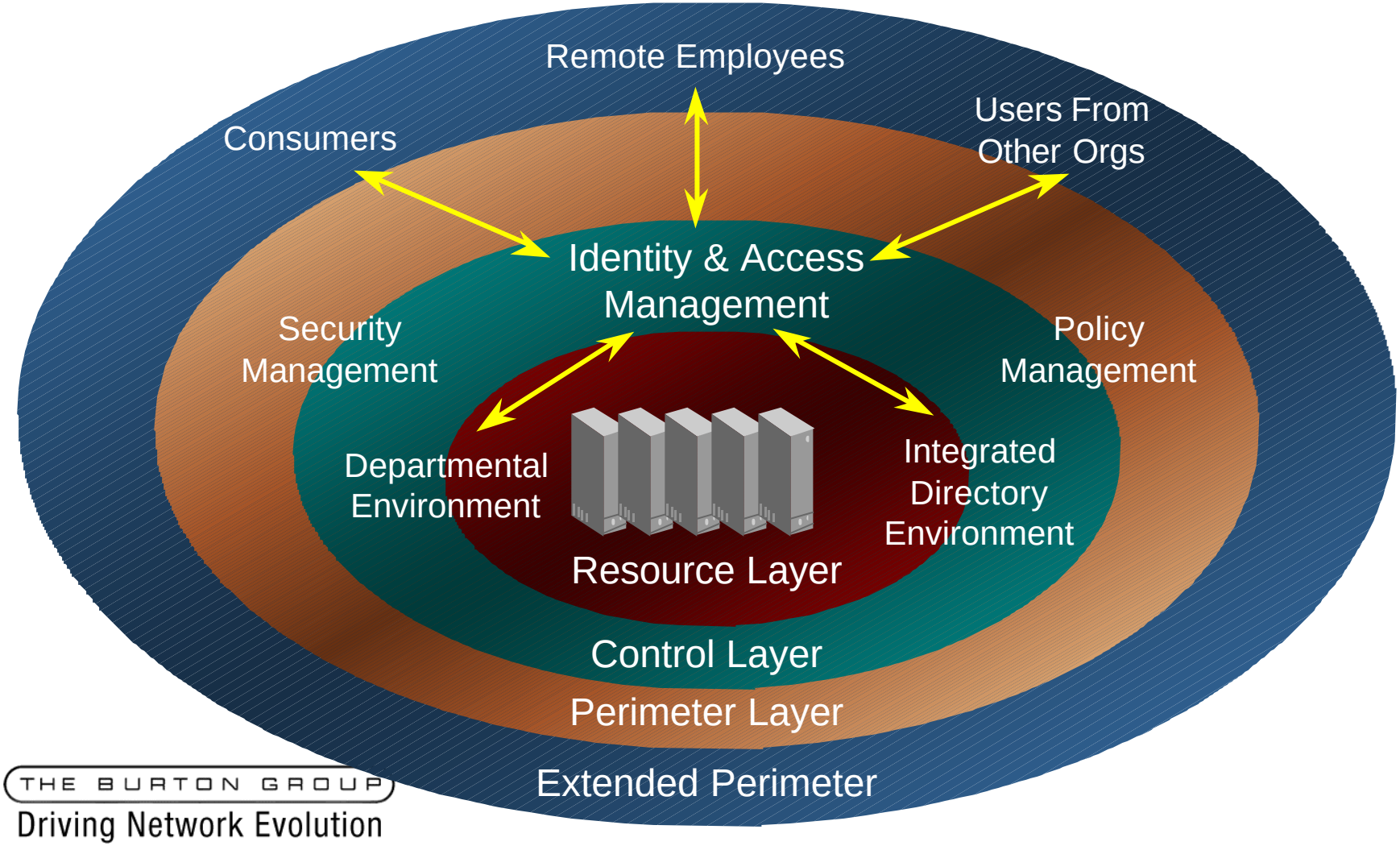
- Business drivers
- *Architecture*
- Interoperability and portability

Architecture

A layered VEN security architecture is emerging



Architecture

Identity and access management solutions

- There's no silver bullet, but infrastructure is emerging
  - Directory services maturing, focus moving to directory-enabled services for I&AM, XML-based registries
  - Identity management systems extending directories
  - Provisioning systems taking on important role in bridging the gap between portals and enterprise security systems
  - Web-based access management systems becoming a popular solution for centralized policy management
  - Portals (personalization) becoming preferred interface to web-based resources
- Combination forms I&AM infrastructure
  - Other components, including CRM and ERP apps, play important roles for overall relationship management

Architecture

Directory services

- Foundation for identity and access management
  - Primarily an identity and resource repository: people, organizations, groups, roles, and other resources
  - Authentication based on identity in directory
  - Personalization based on user attributes
  - Authorization based on user attributes (roles, groups)
  - Sometimes used as policy and certificate repository
- Enterprises are consolidating directory infrastructure
  - LDAP products have reached feature, commodity plateau
  - What's next? XML protocols, multiprotocol servers, registries
  - But if it quacks like a duck . . .

Architecture

Provisioning systems

- Extend directory with tools to create, modify, or terminate user and app access to resources automatically
  - Enable new users quickly (minutes, not days or weeks)
  - Reduce admin costs and enhance security by automating account creation, termination across multiple apps
  - Self-service, centralized password reset/synchronization
  - Uses workflow for conditional processes
  - Centralized policy mgmt: push roles, groups, privileges down to end systems
- Some organizations have rolled their own, but packaged software (directory-enabled) has arrived
  - Expect convergence of provisioning and meta-directory

Architecture

Identity management

- Extends directory with tools for creation and maintenance of identity, including, credentials, entitlements, attributes
  - Centralized user admin, policy definition and control
  - Categorize by roles, groups, profiles for efficiency, accuracy
  - Policy admin: manage resource access according to business and security policies
  - Flexible delegated admin enables assigning a subset of admin authority to a designated user or group
  - Self-service admin gives the user limited capabilities to add, modify, or delete information, password reset, subscriptions
  - Accept identity assertions from third parties
- Expect integration with directory, access management

Architecture

Access management systems

- Combine scalable authentication, authorization
  - Integrate with identity repositories: directory, database
  - Integrate with identity management for delegated admin
  - Integrate with multiple authentication systems (ID/password, NT, Windows 2000/AD/Kerberos, RADIUS, others…)
  - Session management once a user is authenticated
  - Integrate closely with applications/application servers
  - Fine-grained rules: Identify a Web object by URL, operate at page, button or field level
  - Flexible policy enforcement: Static, dynamic, ability to deal with variables: location, time of day, other attribute values
  - Support for different models: groups, RBAC, rules

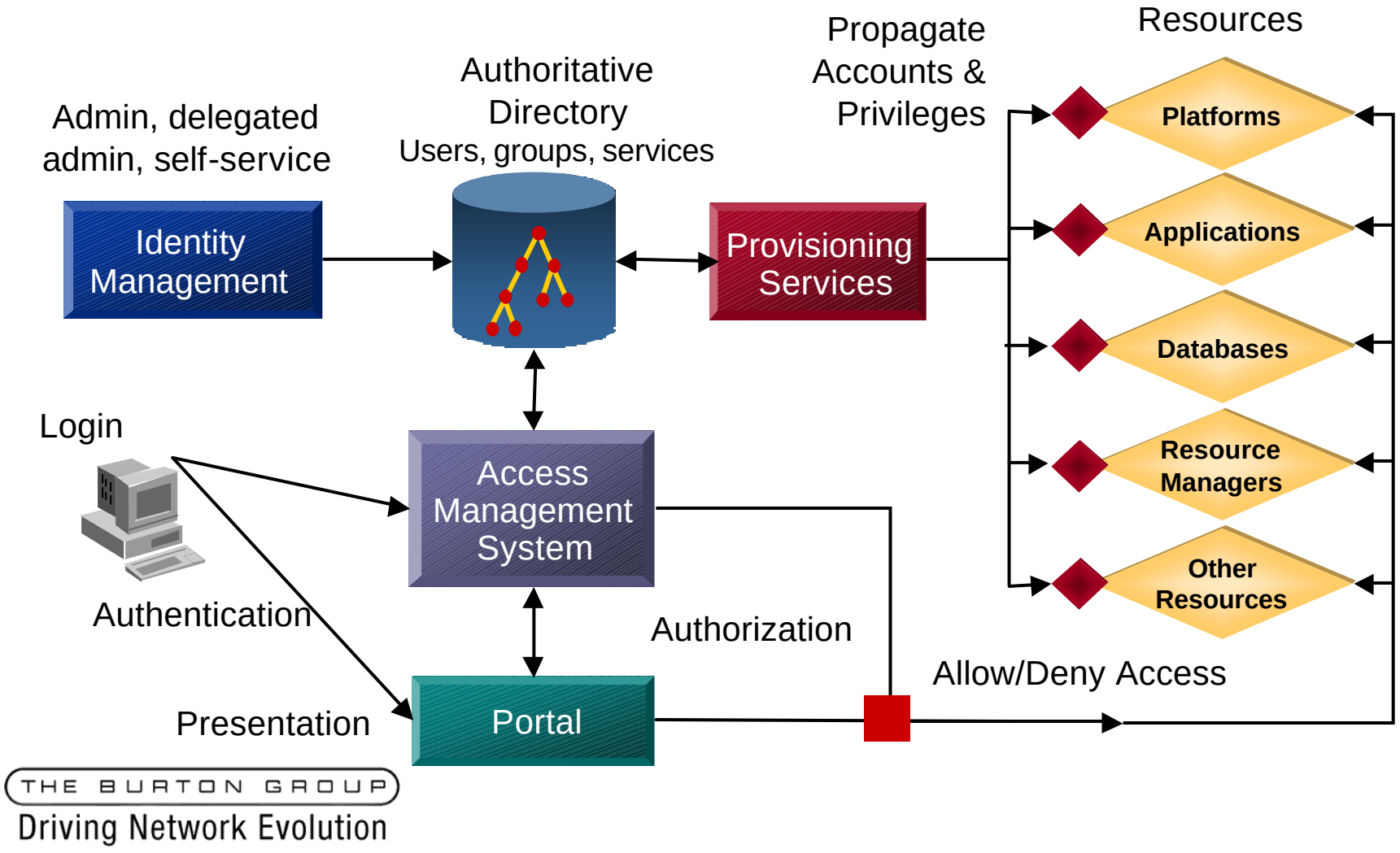
Architecture

Portals (presentation/personalization)

- Web-based systems aggregate content, services and applications into a single view or site, streamline delivery
  - Ambiguous term; for our purposes, portals apply personalization, ACLs based on identity, preferences, roles
  - Other functions, such as search, are outside I&AM scope
  - Ideally, portals should leverage underlying directory, provisioning, and Web access management products
  - Some integrate with access management systems, but few integrate well with directories
  - Breadth, depth of connectors is primary value metric, but many connectors are simple pipes or “eye candy”
  - As Web services gain adoption, connectivity will be overshadowed by identity, security, personalization

Architecture

Identity and access management infrastructure



Architecture

Market maturation (or lack thereof)

- Most of these technologies come from different vendors
  - Overlap between products and approaches
  - Burden of full integration is on the customer
- Consolidation across these functional categories has already begun, and the market will drive further consolidation over the next year to 18 months
  - Early leaders battle for partners, market share
  - Vendors strive for broad e-security positioning
  - Big firms first partner with, then acquire smaller firms
  - Vendors expand into ID management, portal, provisioning
  - Combined solutions: PKI & access management, access management & directory, access management & portal

Identity and Access Management

Agenda

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- Architecture
- *Interoperability and portability*

Interoperability and Portability

Multiple drivers, a dichotomy of needs

- Internal enterprise issues have not abated
  - Too many directories, fragmented identity infrastructure
  - Error prone, expensive to manage
  - How can enterprises integrate and leverage what they have?
- External B2B issues continue to build
  - Do we have to synchronize every directory on the planet?
  - Or can we make identity and entitlements portable?
  - How will you authenticate users?
  - Do hierarchical trust models work?
  - What standards will emerge? And what about privacy?
- External public identity infrastructure wars heating up
  - Passport, Liberty Alliance, Magic Carpet, etc.

Interoperability and Portability

The result: XML standards surge

- Security Assertions Markup Language (SAML)
  - Allows exchange of identity, authentication, authorization assertions between loosely coupled security domains
- XML Access Control Markup Language (XACML)
  - Richer XML constructs for authorization, access control info
- XML Key Management Services (XKMS)
  - Hope on the horizon for PKI-enabling applications
- Directory Services Markup Language 2.0 (DSML)
  - LDAP in XML clothing
- Service Provisioning Markup Language (SPML)

Interoperability and Portability

Realistic potential

- Why now and why XML?
- Alignment of market need, technology evolution
  - The Web services framework promises a loosely coupled environment for application interoperability
  - Simple Object Access Protocol (SOAP) provides XML protocol for a standard communication bus
- When coupled with that framework, these standards have significant potential to address the need for interoperability and federation for B2B applications
  - Integrated internal environments capable of asserting information, communicating using SOAP and these XML standards

Interoperability and Portability

Public identity infrastructure

- Passport has a big lead, but Microsoft's security problems create an opportunity for others
- You can't eat just one
- Passport, Liberty Alliance, Magic Carpet, and others will force enterprises to address intersection between enterprise identity/role and public identity
  - If your employees have a Passport or Liberty ID, can they use it internally?
  - If they need a Passport or Liberty ID to access external services to do their jobs, how will you manage those IDs?
  - If a partner's employees have Passport or Liberty IDs, will you accept them? How will both you and the partner manage those IDs?

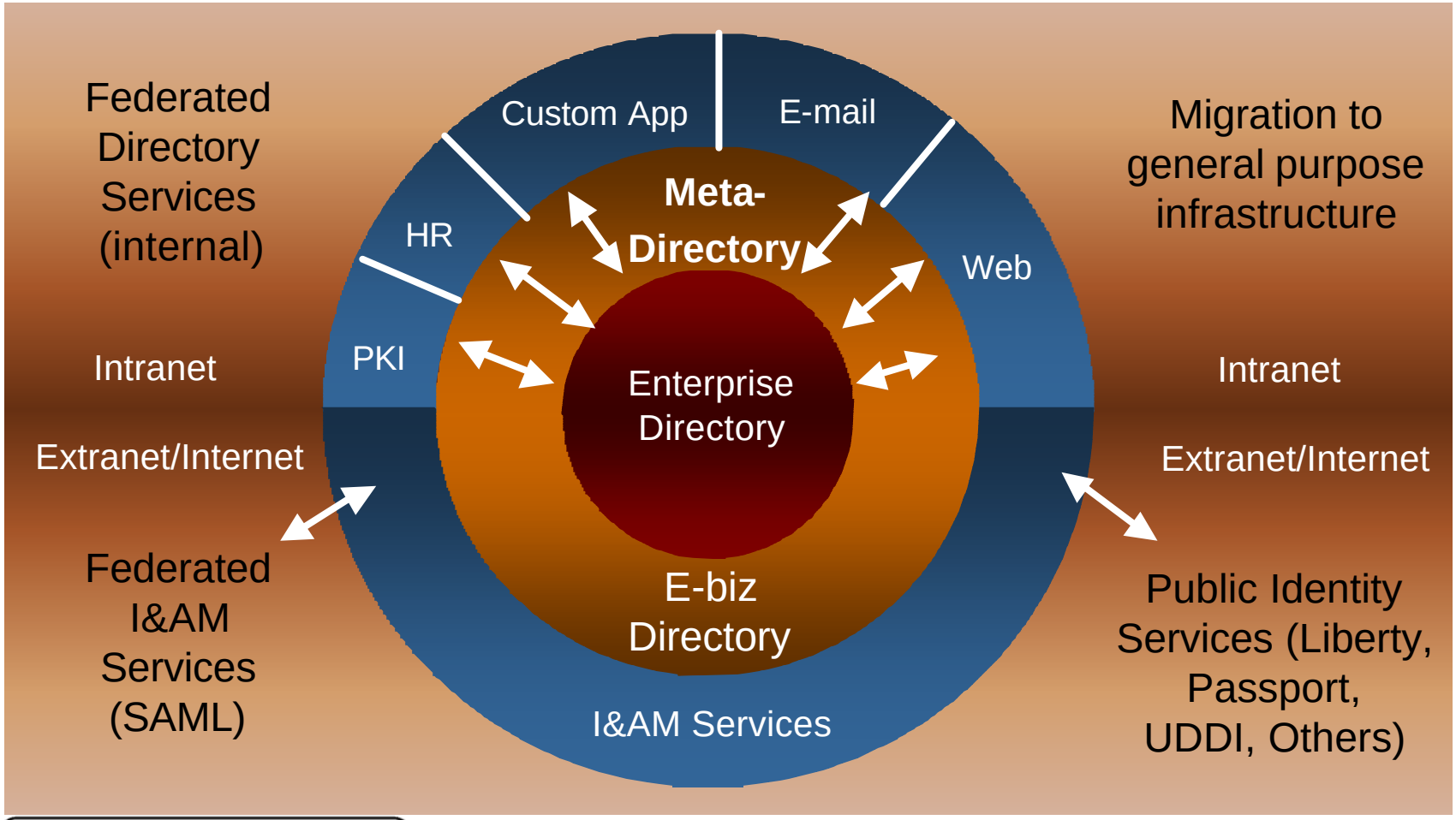
Interoperability and Portability

Public identity infrastructure

- Federation and interoperability are requirements
  - Microsoft has proposed Kerberos, and since Catalyst Conference 2001 has softened its tone in regard to SAML
  - Liberty Alliance has released precious few details, but it's fair to assume that Sun's investment in directory will play a significant role in what Liberty does
  - AOL has quietly rolled out Magic Carpet, but no word on how federation will work
  - Many of the same standards that are shaping B2B environments should/could apply to public identity systems
  - In short, we are only at the beginning of the discussion, but the market will force federation to occur
  - But don't be surprised when it gets ugly

Interoperability and Portability

Integrated directory services enable federation



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Interoperability and Portability

A final word on SSO

- SSO is a dirty word; expunge it from your vocabulary
  - *Reducing* sign ons is a valid goal, but a *single* sign on is a security compromise waiting to happen
  - Even if we achieve a standard authentication infrastructure that applications share, SSO is not realistic
  - Different applications require different security, and different app states may require different security in a single app
  - Policy should guide how and when challenges occur
  - And one single credential of any kind should never give anyone access to everything
- Create integrated security architecture that relies on general-purpose mechanisms for integration and interoperability, but enables real security

Identity and Access Management

Conclusions

- The road to identity and access management infrastructure has curves, detours and construction zones
- The end destination and scenery along the way is well worth the journey—solid business justification is there for most large organizations
- Invest in general-purpose systems today
- Plan carefully, but be flexible
- Use the infrastructure to gain a strategic competitive advantage