Project midPoint

or

how a handful of fools fought the Giants

Evolveum

Radovan Semančík

Open Source Weekend, April 2016

Radovan Semančík

Current:

- Software Architect at Evolveum
- Architect of Evolveum midPoint
- Contributor to ConnId and Apache Directory API

Past:

- Sun LDAP and IDM deployments (early 2000s)
- OpenIDM v1, OpenICF
- Many software architecture and security projects

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Project midPoint

- Advanced **Identity Management** Product
- Started 2010-2011 (**5+ years**, 16 releases)
- more than **500K lines of code** (Java)
- **World-wide** recognition

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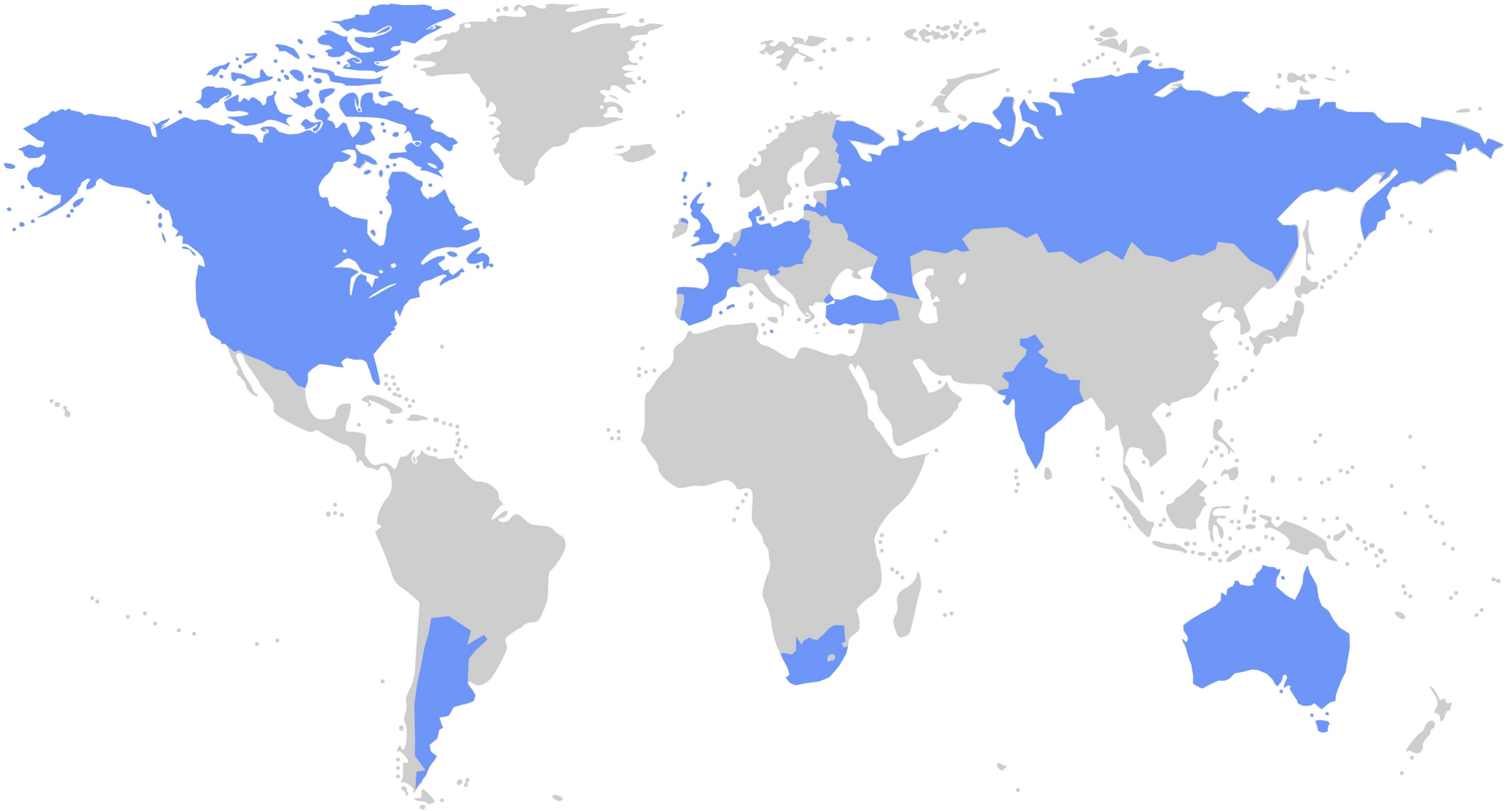
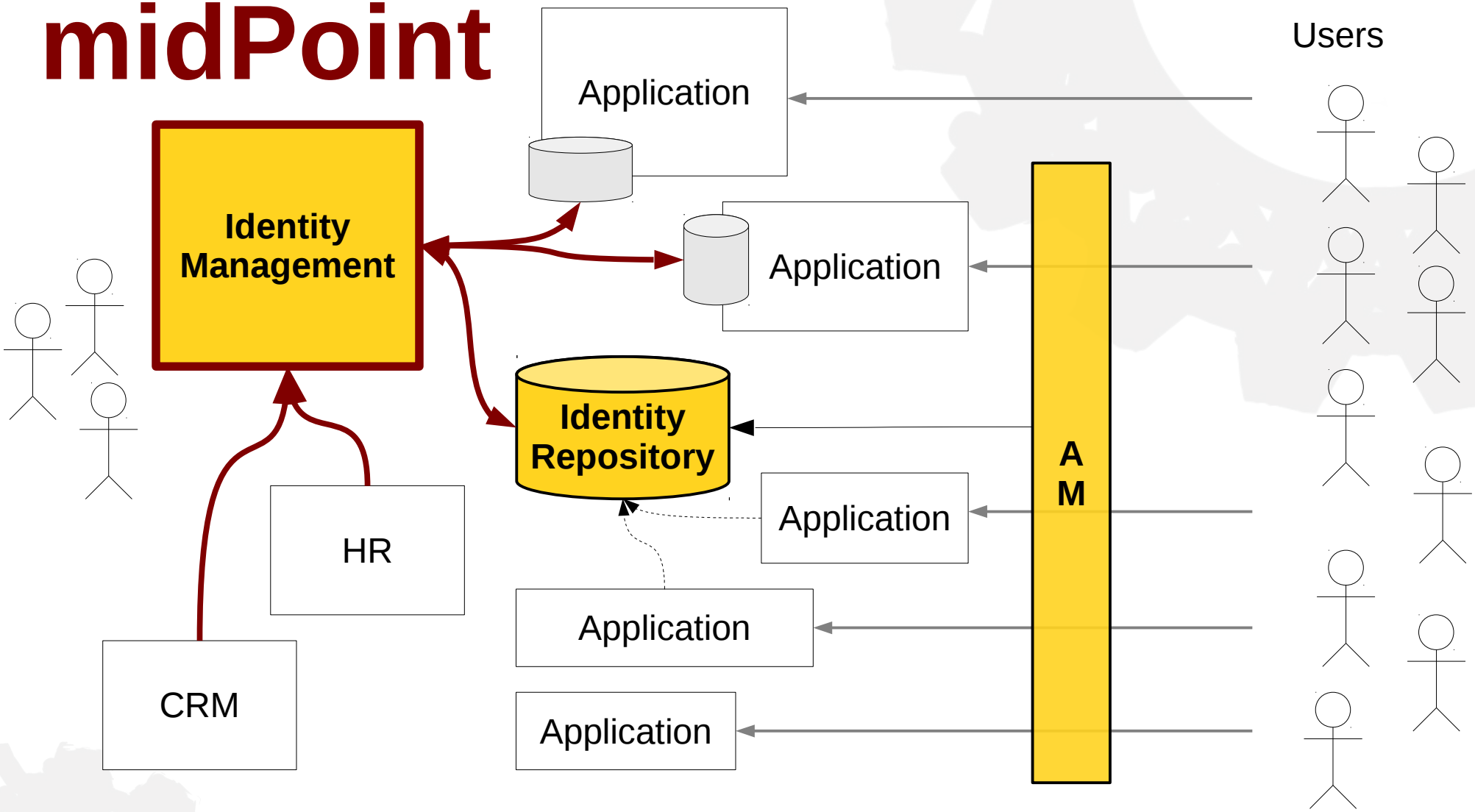
midPoint is used all around the world



midPoint



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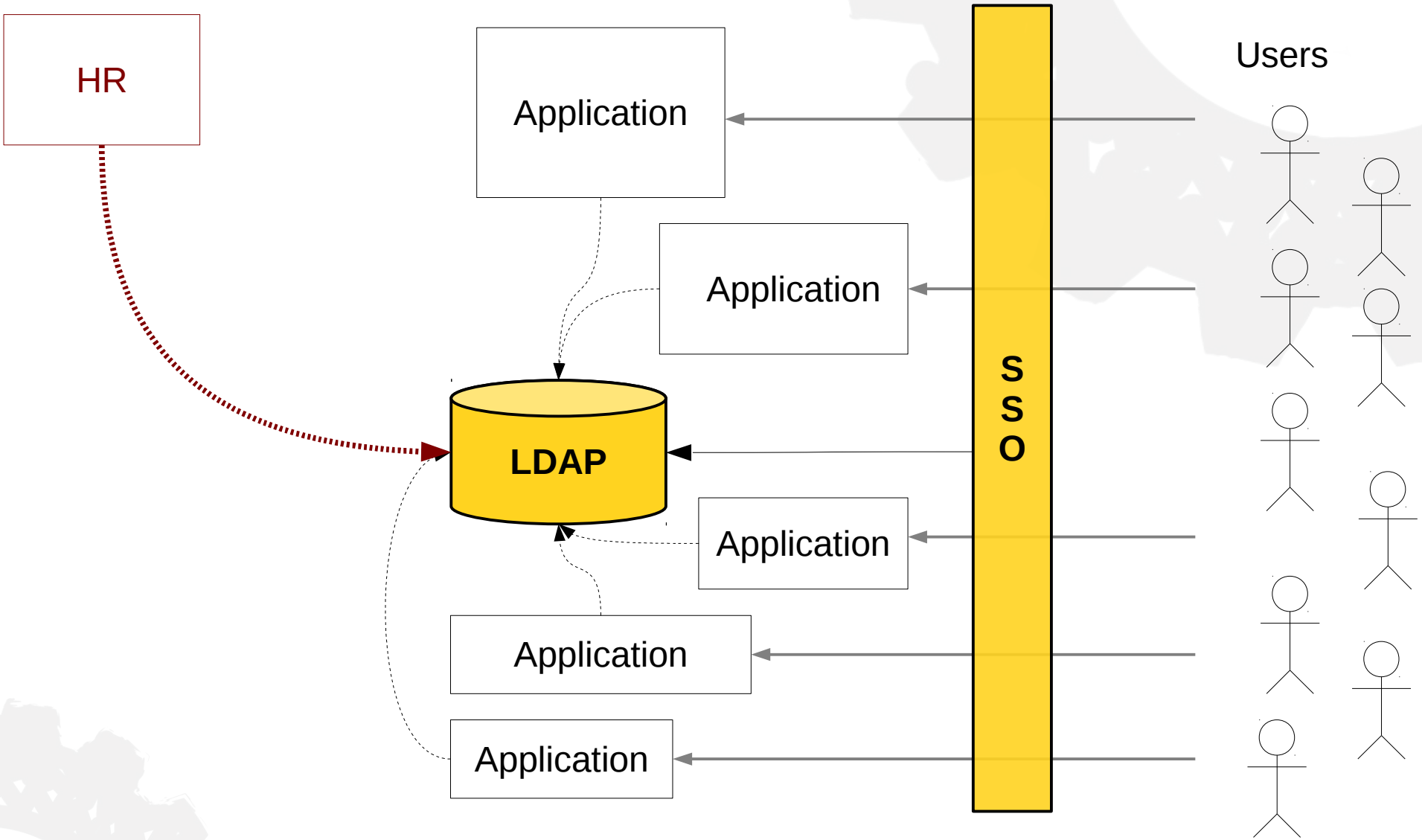
There is no security without identity management

If you have no IDM, how can you be sure that ...

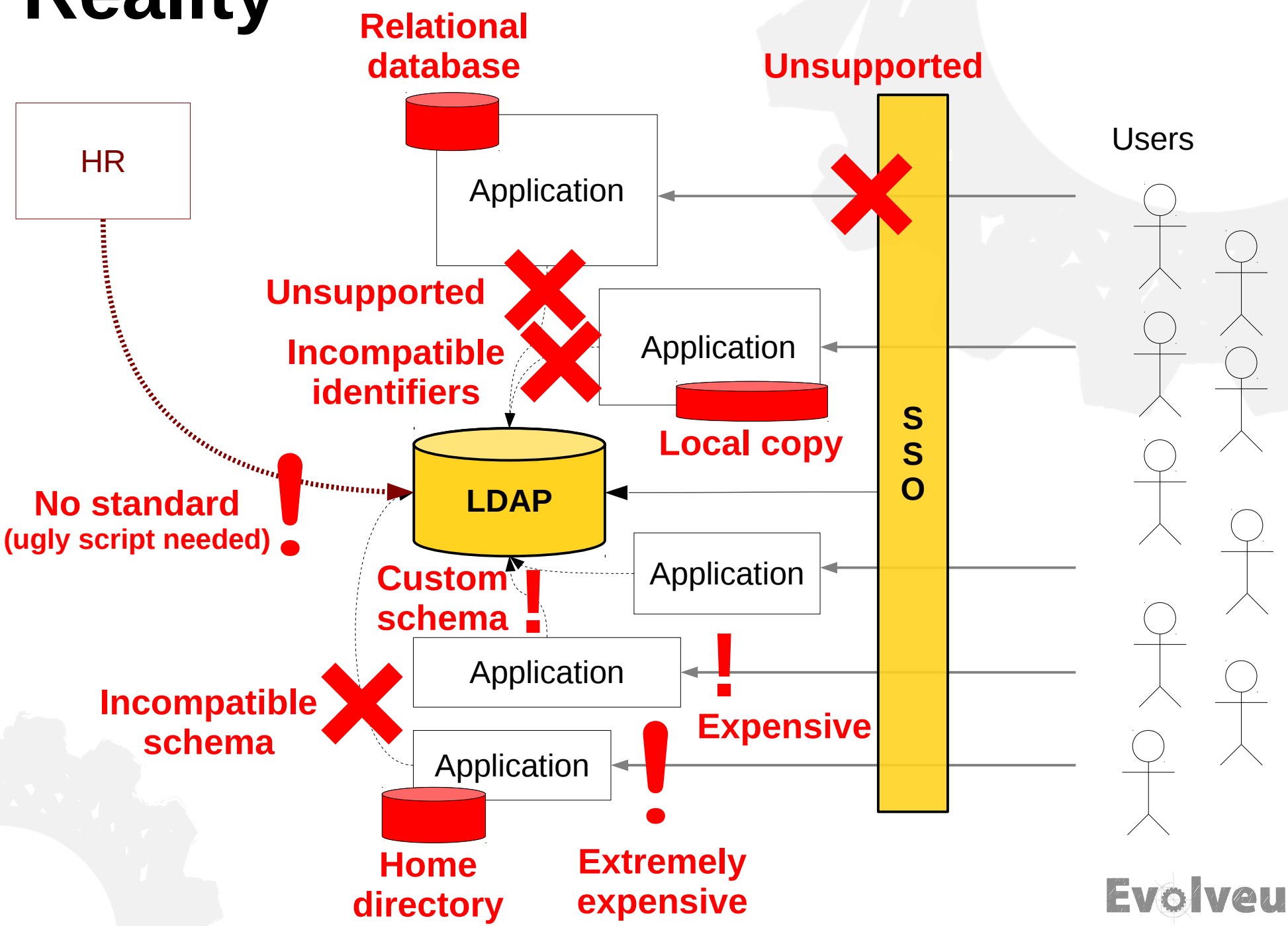
- illegal accounts are disabled/deleted?
- temporary accounts are deleted?
- users have only the least privileges?
- the privileges are not accumulated?
- no secondary authentication is possible?
- the data are up to date? (title, affiliation, …)
- notifications and tasks are suspended?

The solution is trivial
Let's put everything in LDAP!

Expectation



Reality



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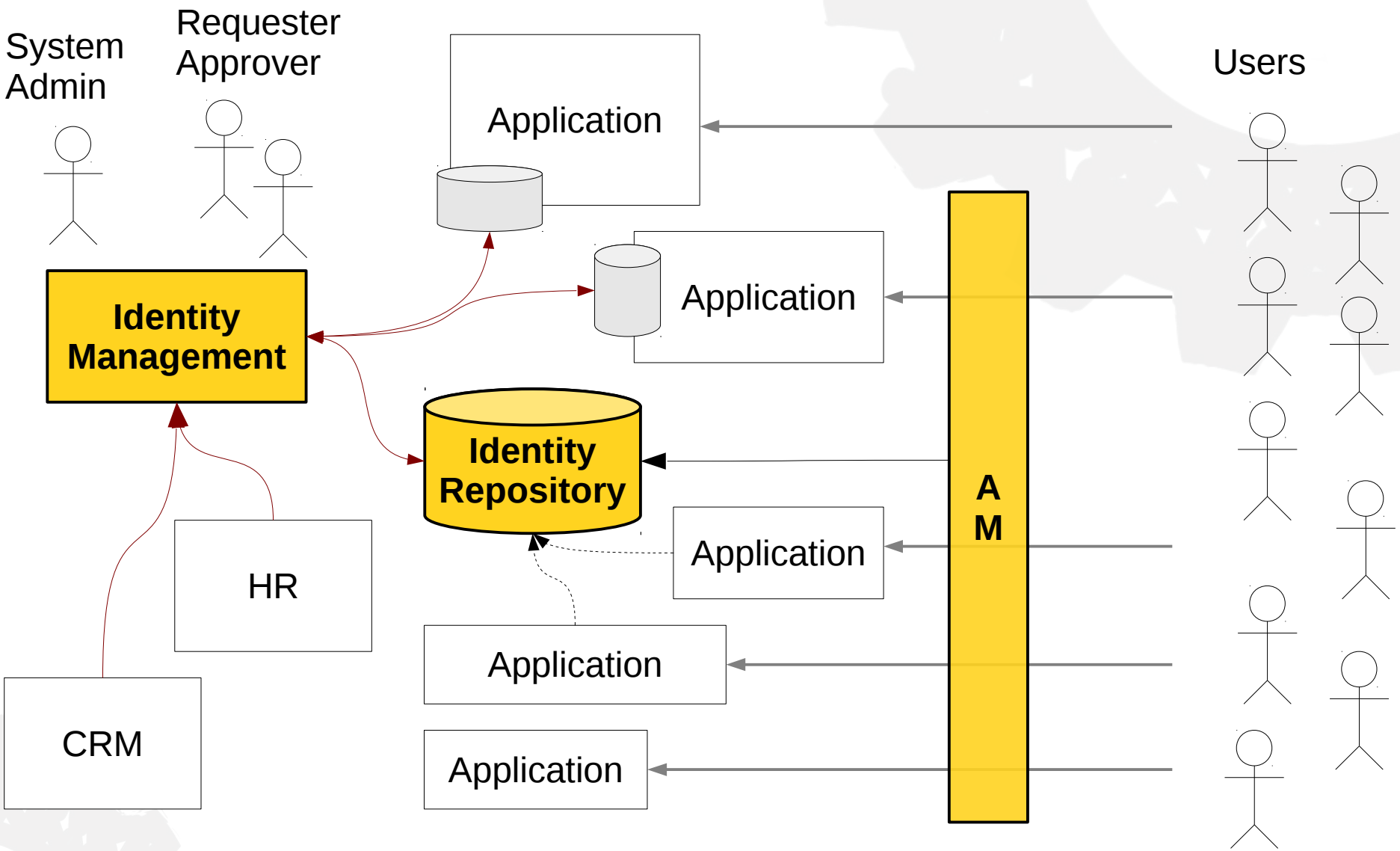
“Single directory” approach is not going to work

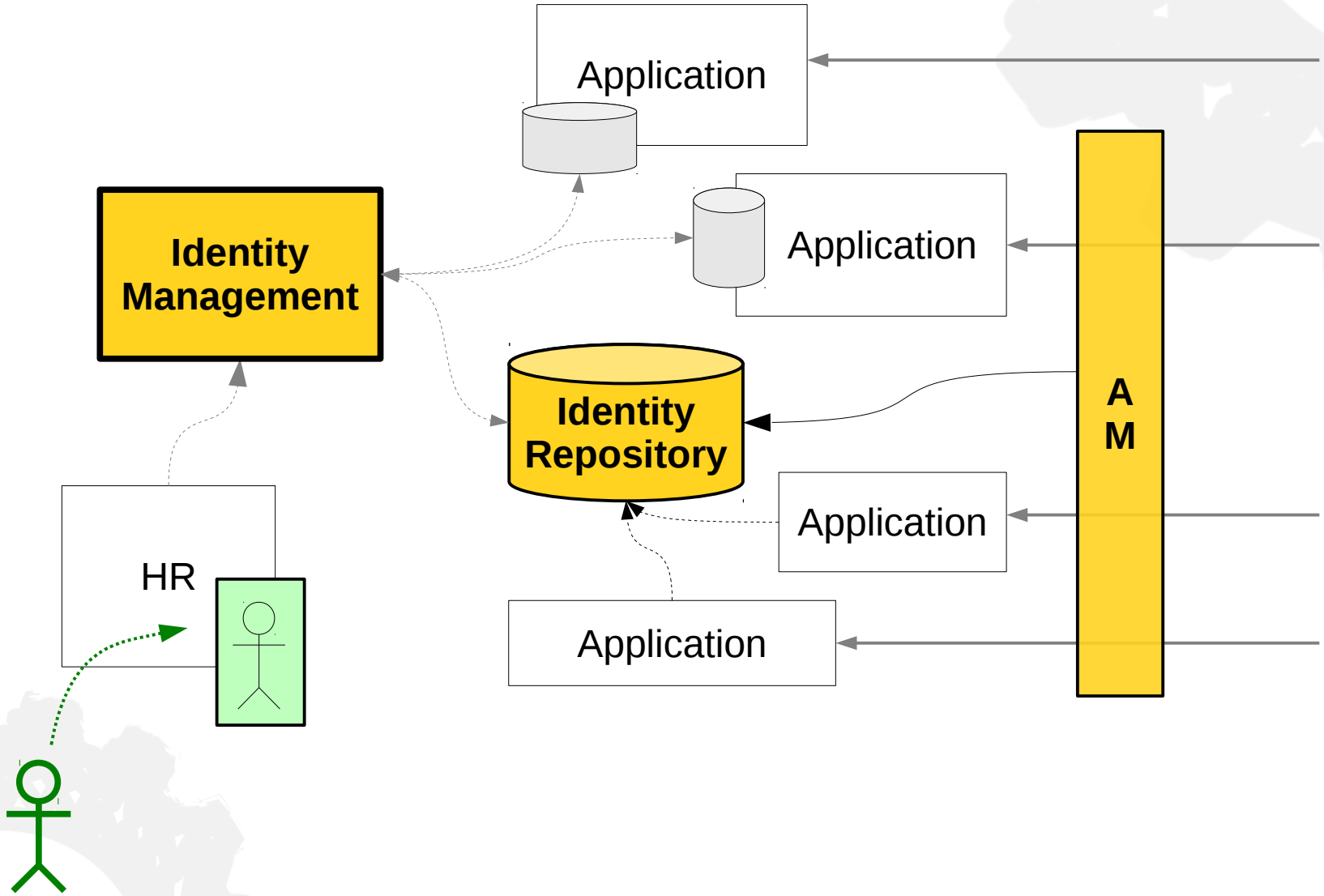
… and this has been known for 10 years (at least)

*) yet, it might work well for simple and quite homogeneous environments

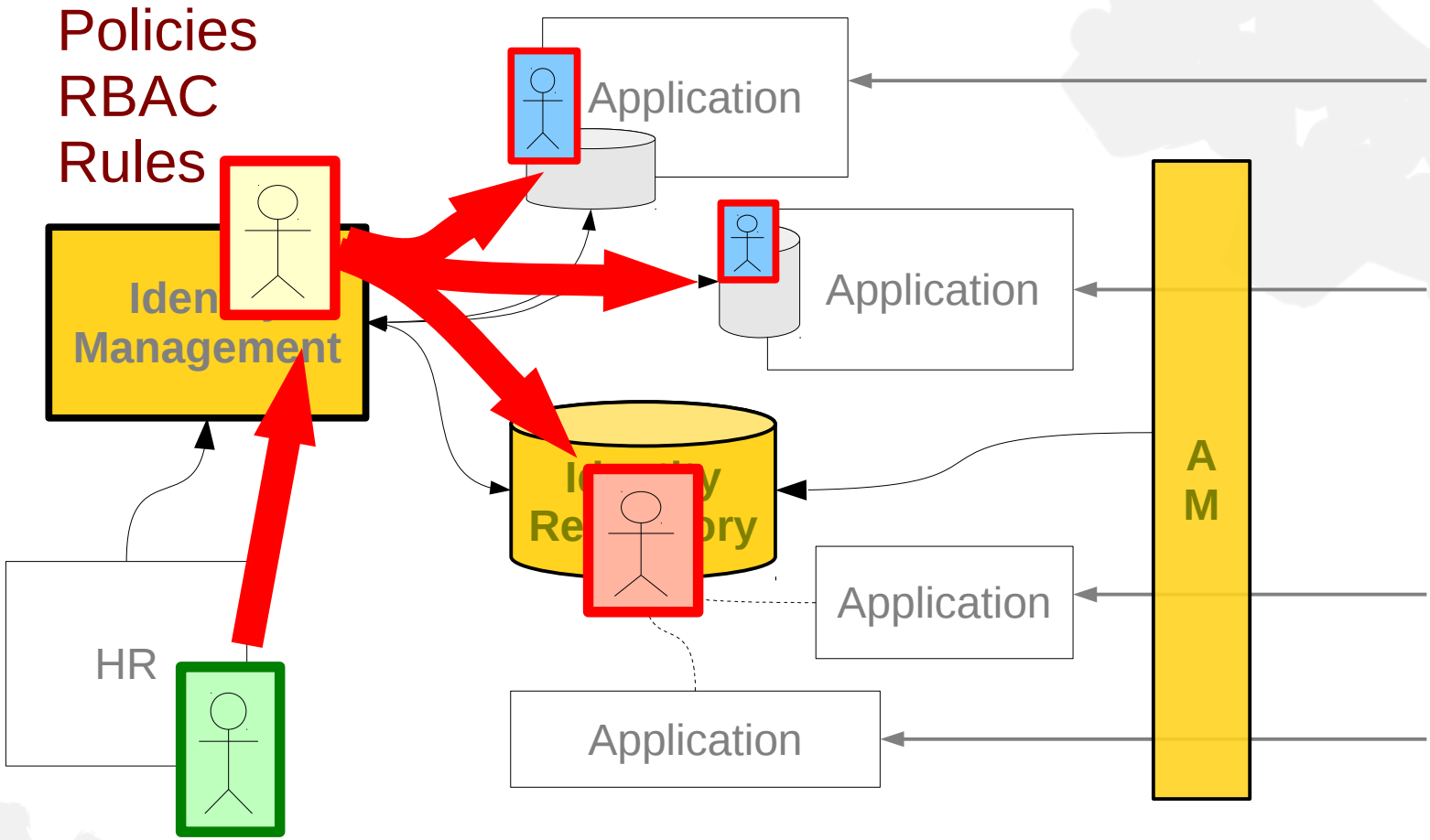
Identity and Access Management



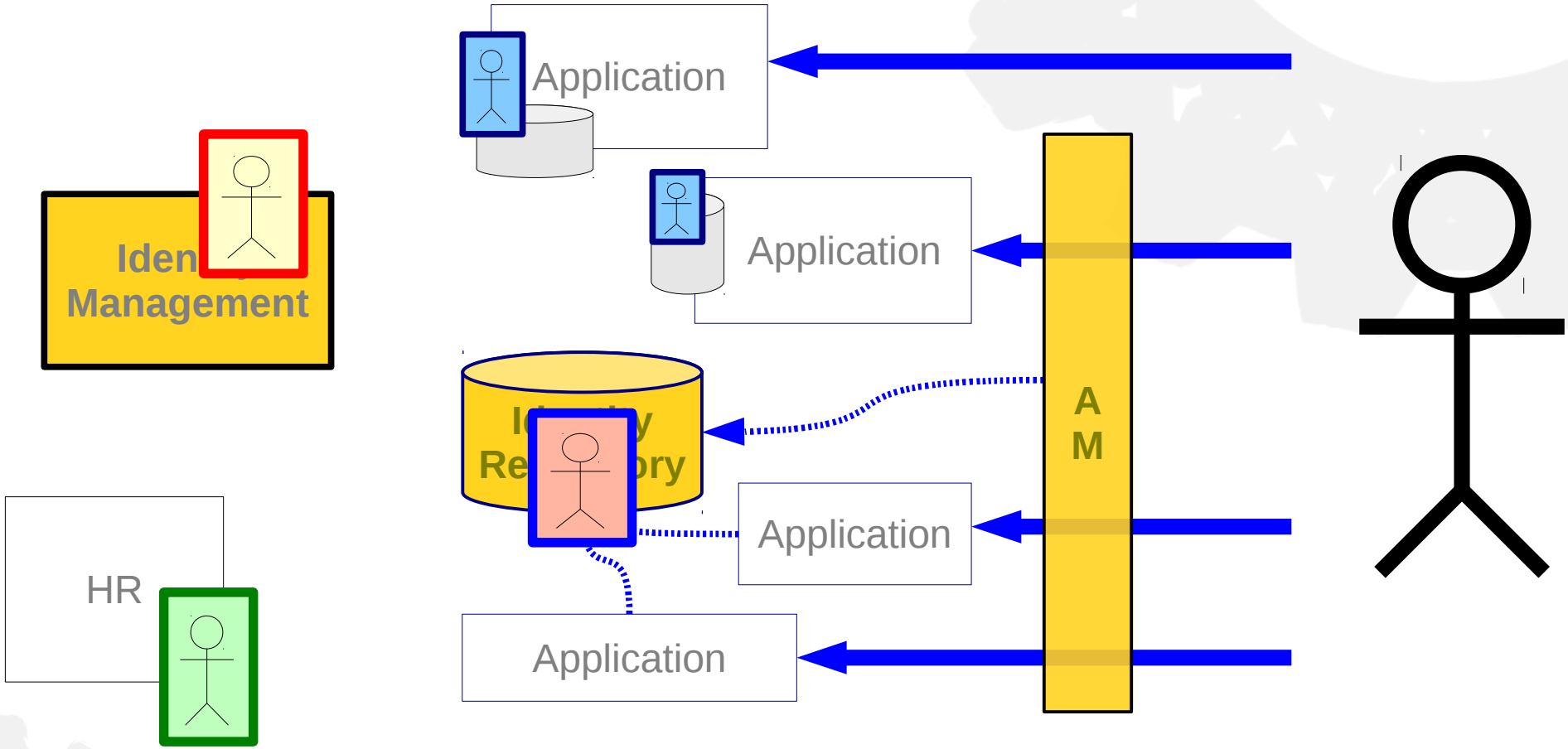
How IDM works?



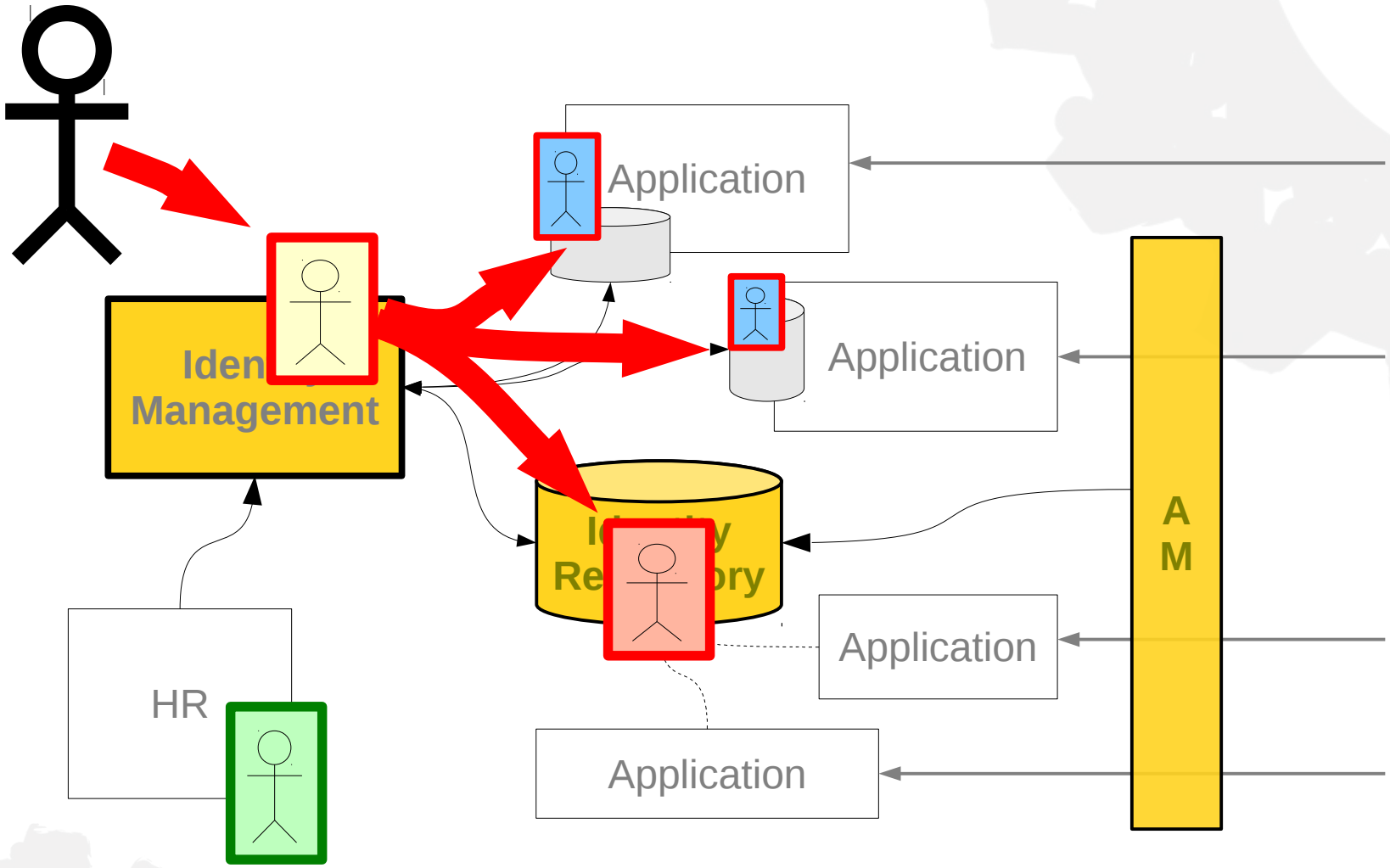
Automatic user provisioning



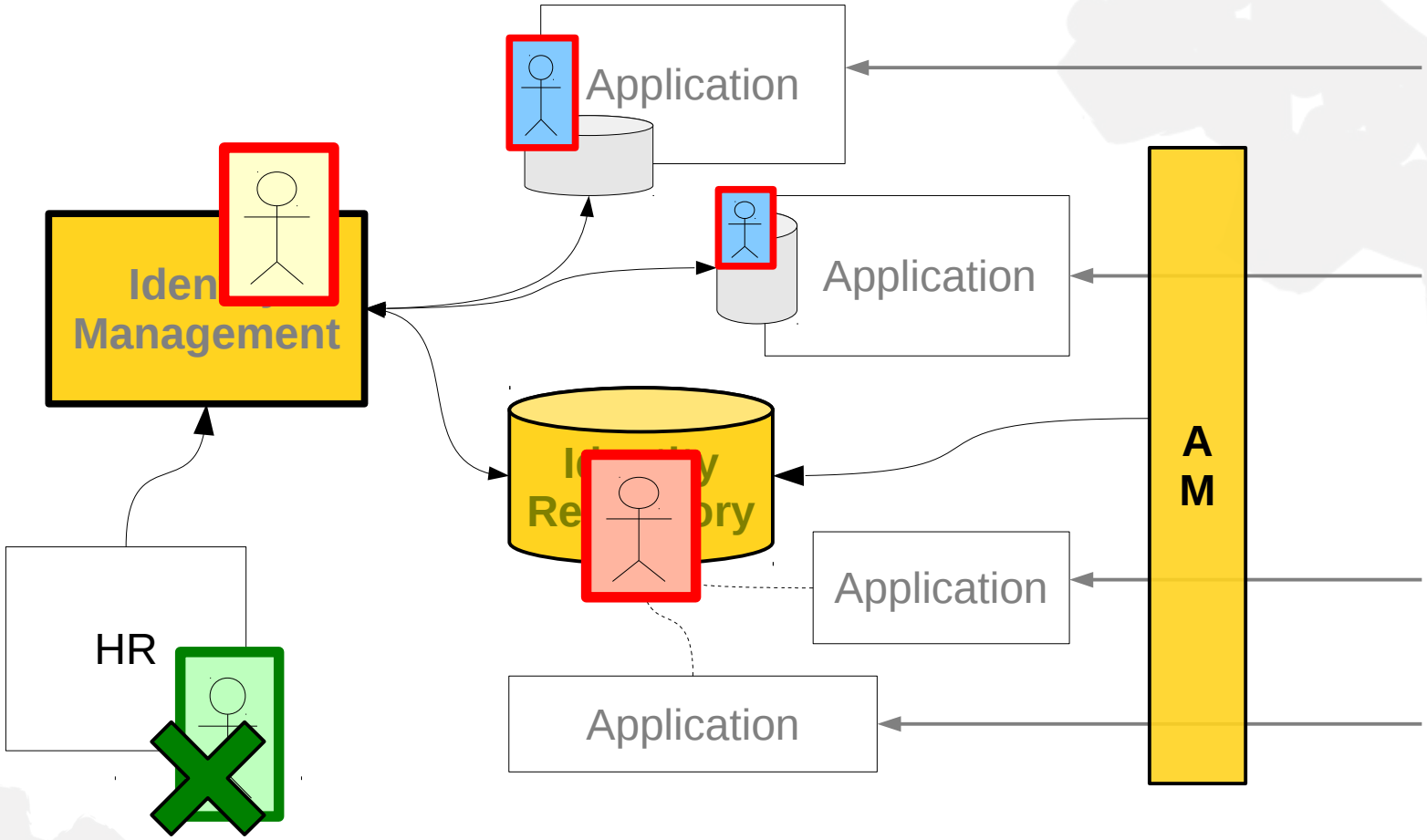
Business As Usual



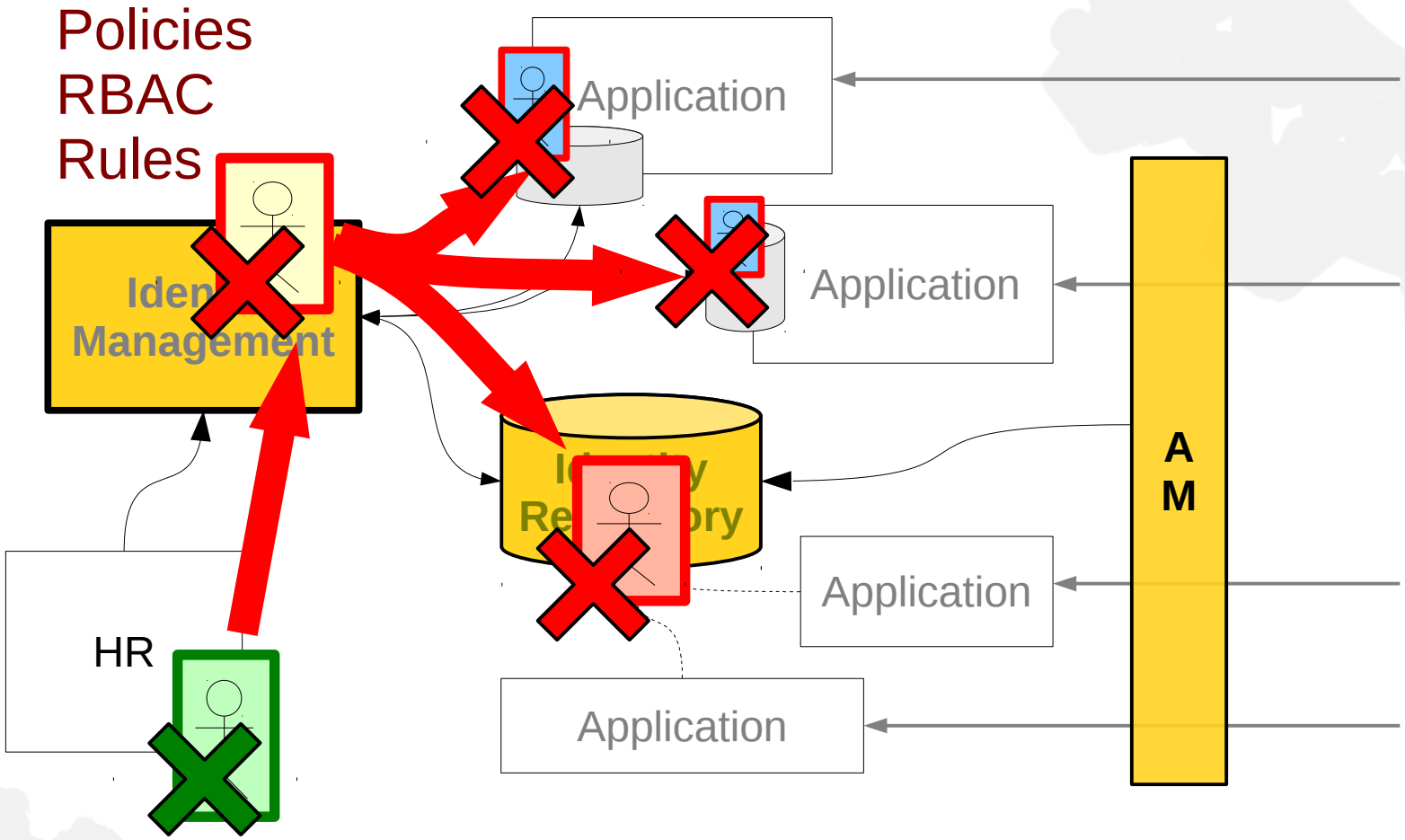
Password reset (self-service)



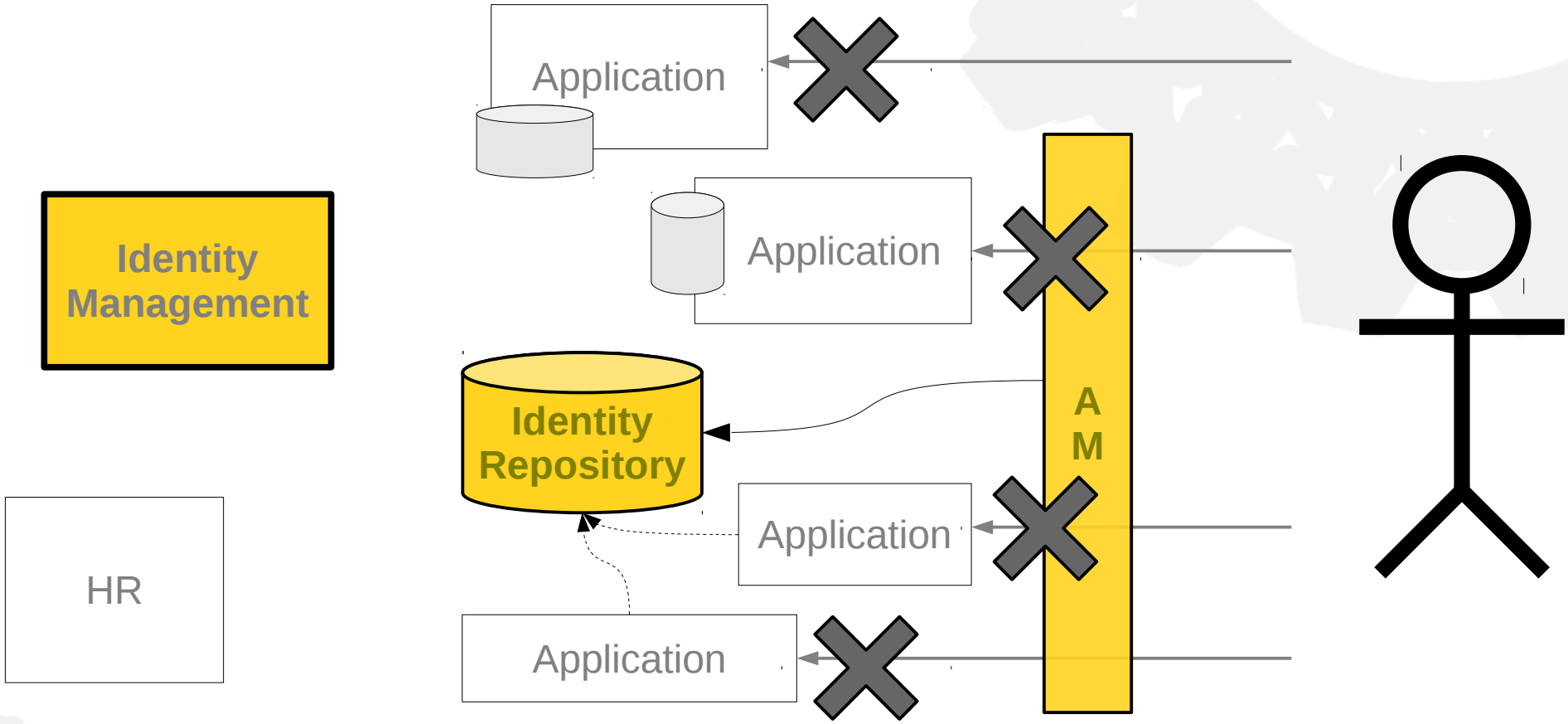
Employee Leaves Company



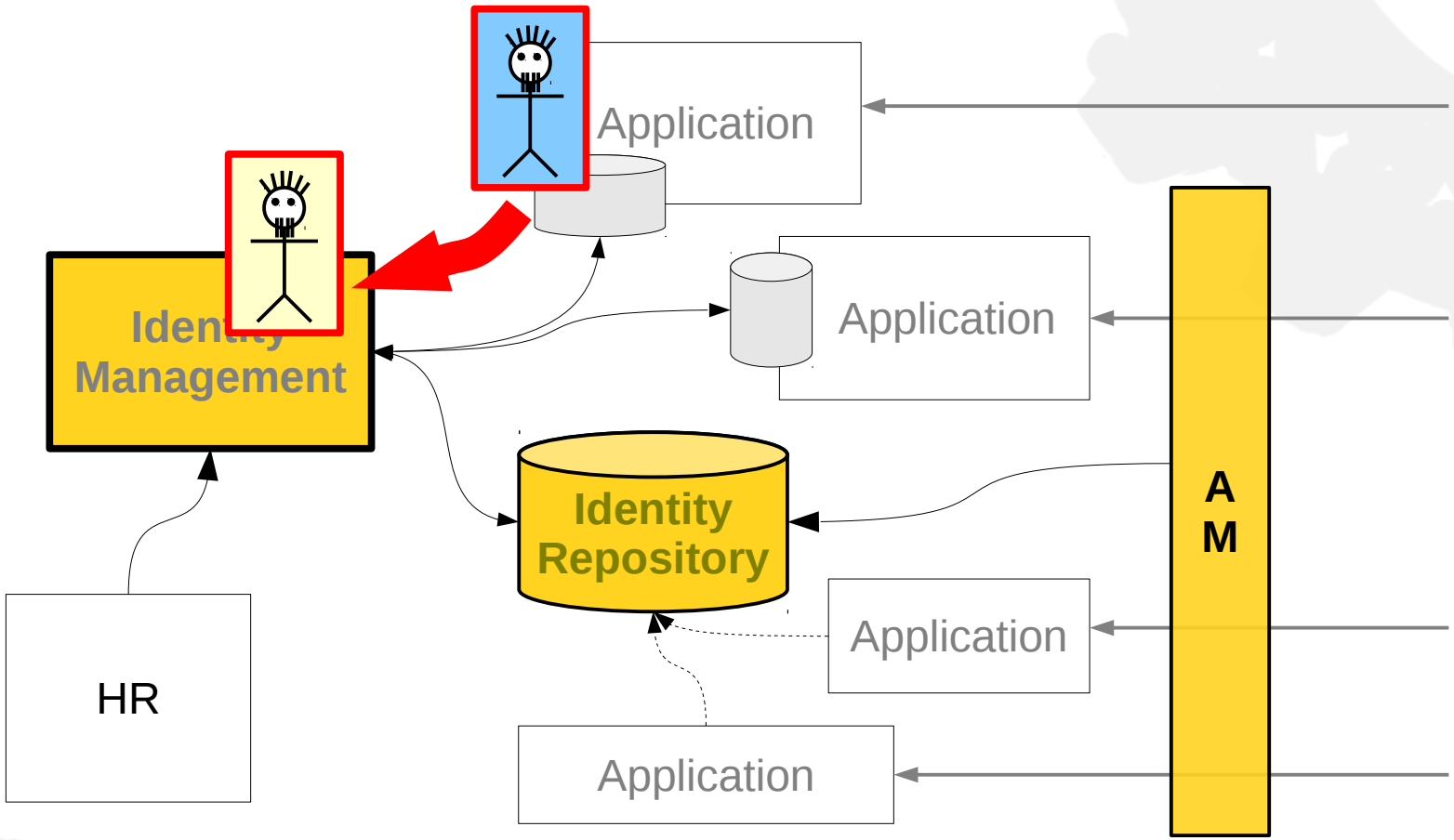
Automatic user deprovisioning



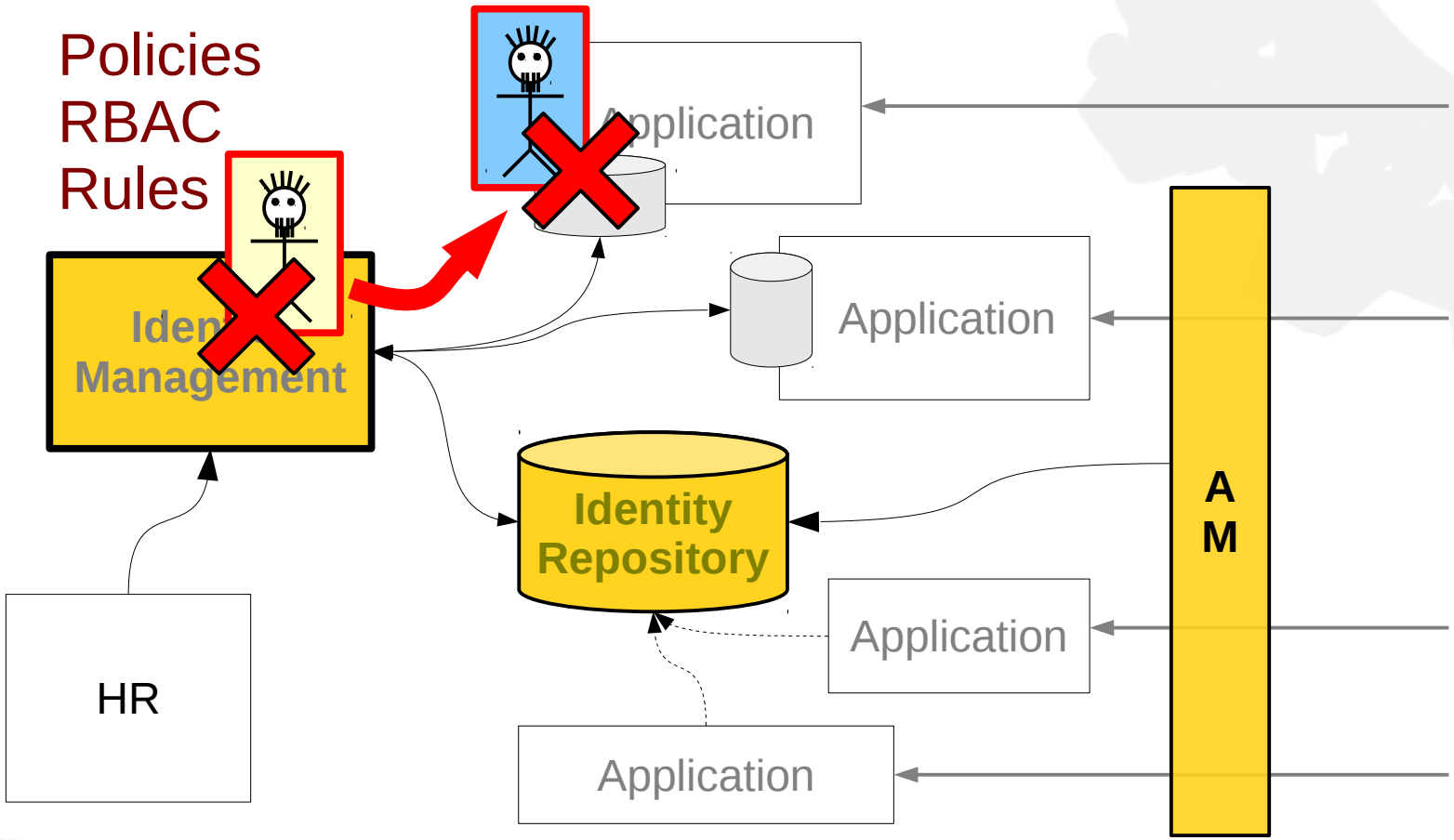
Business As Usual



Bidirectional Synchronization



Policy enforcement



What Identity Management does?

- Provisioning
- Synchronization
- Self-service
- Password management
- Credentials distribution (SSH, X.509)
- RBAC
- Organizational structure
- Entitlement management
- Identifier management
- Data mapping
- Segregation of duties
- Workflow
- Notifications
- Auditing
- Reporting
- Governance
- ...

Edit user 'leonardo'

Leonardo da Vinci (leonardo)

Department of Machines

✔ Active

Basic

Details

Name *	leonardo
Full Name	Leonardo da Vinci
Given Name	Leonardo
Family Name	da Vinci
Nickname	Leonardo
Telephone Number	+39 6 8687797
Employee Number	1
Employee Type	Full-time employee
Jpeg photo	Browse… No file se

Extension

Artistic Name	Leonardo

Activation

Administrative Status	Enabled

Password

Password	password is set	Change

Projections

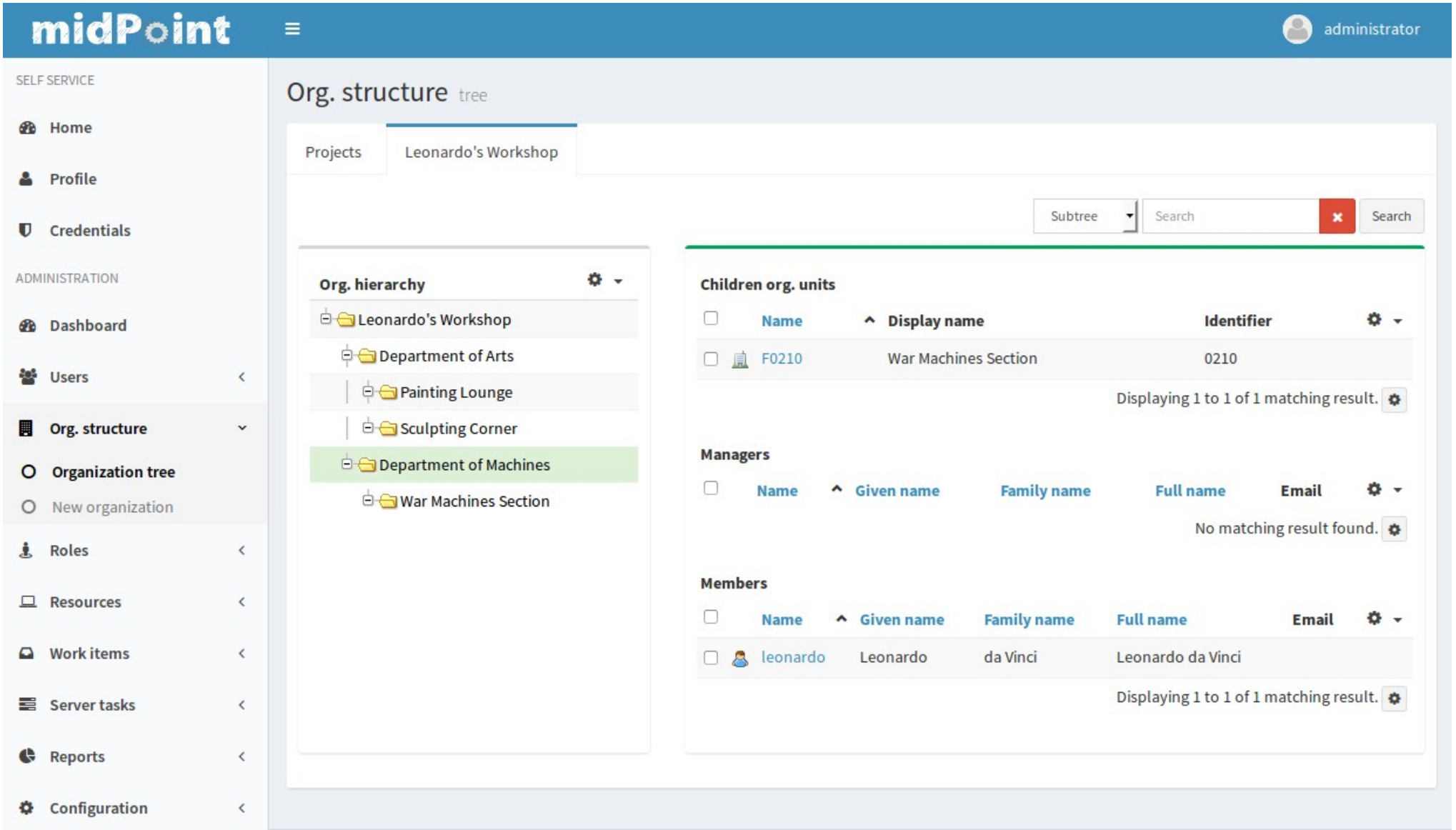
- HR Feed default, 1
- Addressbook default, leonardo
- LDAP Server (OpenLDAP) over new LDAPConn. default, uid=leonardo,ou=People,dc=example,dc=com

Organizations

- Department of Machines F0200
- Smile P0001

Assignments

- F0200 -
- P0001 -
- Full Time Employee -
- Patron -
- HR Feed -


midPoint
administrator
SELF SERVICE
Home
Profile
Credentials
ADMINISTRATION
Dashboard
Users
Org. structure
Organization tree
New organization
Roles
Resources
Work items
Server tasks
Reports
Configuration
Org. structure tree
Projects
Leonardo's Workshop
Subtree
Search
Search
Org. hierarchy
Leonardo's Workshop
Department of Arts
Painting Lounge
Sculpting Corner
Department of Machines
War Machines Section
Children org. units
Name
Display name
Identifier
F0210
War Machines Section
0210
Displaying 1 to 1 of 1 matching result.
Managers
Name
Given name
Family name
Full name
Email
No matching result found.
Members
Name
Given name
Family name
Full name
Email
leonardo
Leonardo
da Vinci
Leonardo da Vinci
Displaying 1 to 1 of 1 matching result.

This IDM looks like the best thing since the sliced bread. What's the catch?

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The commercial IDM products are expensive.

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The commercial IDM products are expensive.

Very, very expensive.

Open Source to the Rescue

But … there was no practical FOSS solution

The market was taken by

Sun, Oracle, IBM, CA, Microsoft, SAP, ...

(money, money, money)

Open Source to the Rescue

2010-2011

We have started

one developer, two developers, three developers, …

bumpy start (details in the blog)

by mid-2011 fully operational

2011

Good architecture, code base, skills

No real business plan

No customers

Big, rich, established competitors

foolishly naïve lunacy

2011-2014

hard work

no money

2015-2016

success

and beyond

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money

No big investor, only FFF (Friends, Family, Fools)

Key employees receive shares from profit

Early income: anything (really)

Current income: subscriptions and professional services

2015: (small) profit

technology

Small team (5 developers + 2 engineers)

Efficiency: Java, formal data model, generated code

Cooperation: ConnId, Apache Directory API

Developer freedom: no bosses, pet projects, ...

Experiments: LDAP, GUI, OpenStack, ...

Great Technology in MidPoint

- Java, Spring, Apache Wicket (nothing special here)
- Good architecture from day one
- Internal scripting: Groovy, JavaScript, Python
- Self-healing system
- Prism Objects
- Advanced Hybrid RBAC
- ...

Prism Objects

Schema

```
complexType: UserType
   element: givenName
   element: fullName
   …
```

GUI

User details

Given name: [ ]

Full name: [ ]

[Cancel] [Save]

Code

```
class UserType {
   String givenName;
   String fullName;
   …
}
```

XML, JSON, YAML

REST

SOAP

```
<wsdl>...</wsdl>
```

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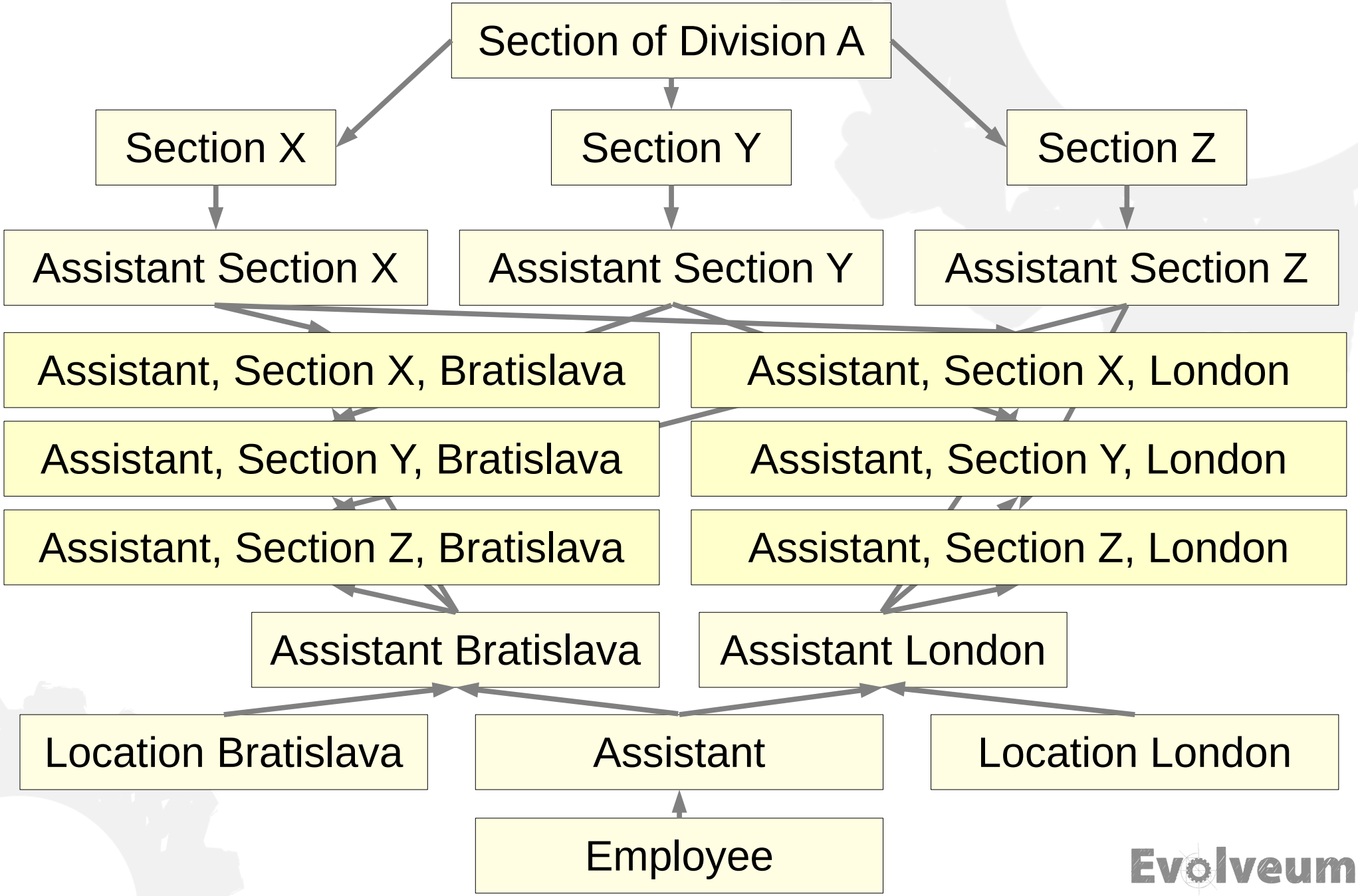
Classic RBAC → Role explosion

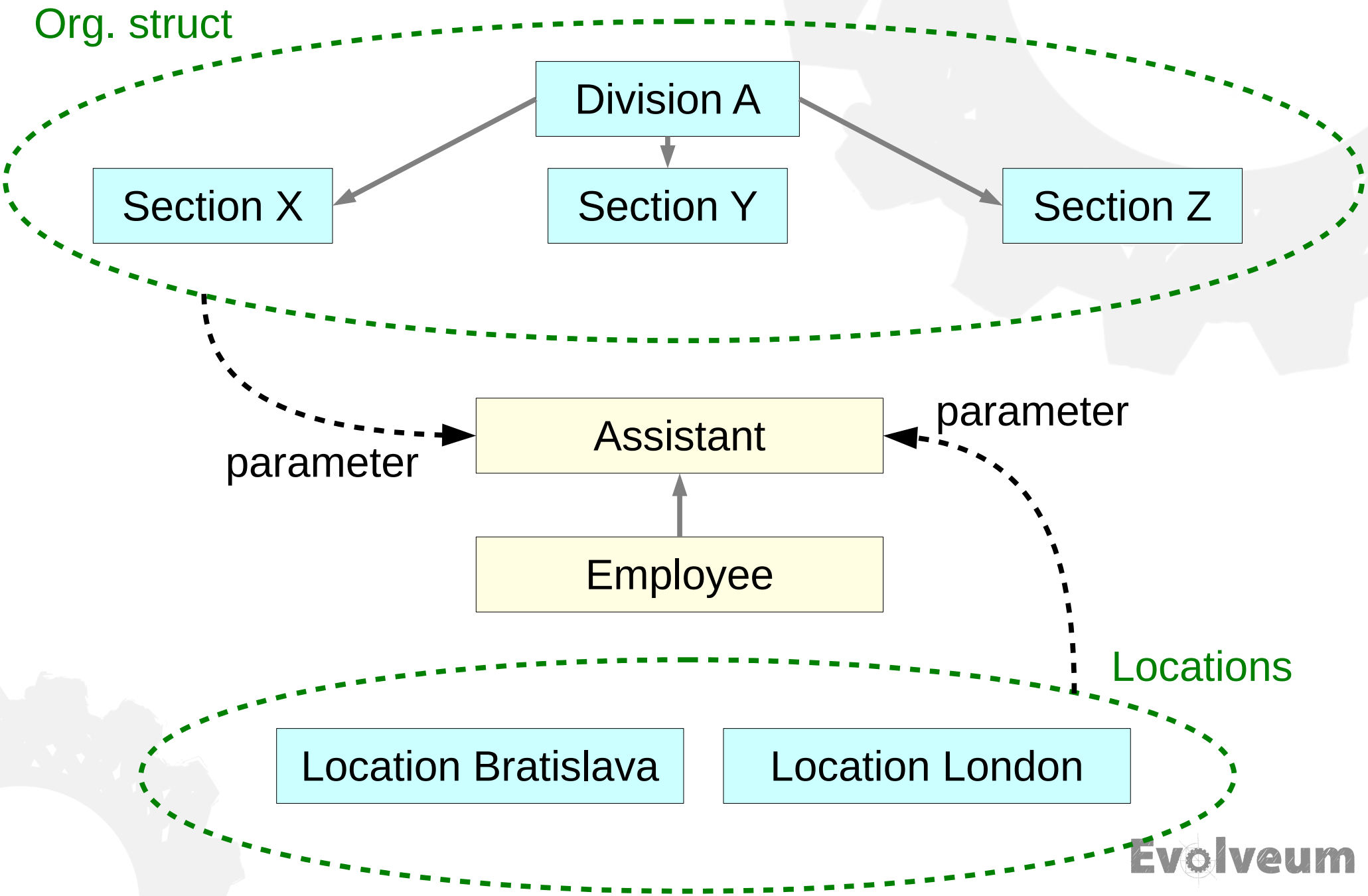


Classic RBAC → Role explosion

More roles than employees

Hard problem of identity management
is transformed to
much harder problem of role management

MidPoint Advanced Hybrid RBAC



success

Most comprehensive open source IDM system

Great engineering team, great technology

Recognized by analysts (Gartner, KuppingerCole)

World-wide adoption

Successfully competing with Oracle, IBM, Microsoft, …

Lessons learned

- Forget about Slovakia. World is your market!
- Efficiency: Small team, big impact
- Burn money slowly. Wait for the right moment.
- Do no look for customers,

  let customers look for you.
- Technology matters. A lot. Really.
- Good platform and architecture is crucial
- Newest technology is not always coolest

Questions and Answers

Conditions
Expressions
Provisioning
Management
Schema
Extensibility
Segregation of duties
Password reset
RBAC
Synchronization
Policy
Organizational structure
Consistency
Workflow
Entitlements
Connectors
HA
Web UI
Governance
Scripting
Self-service
Audit
Authorization
Localization
Notifications
Data mapping
REST
Identifiers
Parametric roles
Delegated administration
Bulk actions

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Thank You

Radovan Semančík

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