

The MIT logo, consisting of the letters 'MIT' in a white, stylized font on a dark red background.The IS&T logo, consisting of the letters 'IS&T' in a white, stylized font on a dark red background.

Parking Management Redesign @ MIT -
SAP and so much more

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- About MIT
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- Project Drivers
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- Project Resources & Timeline
- Lessons Learned
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- Q&A

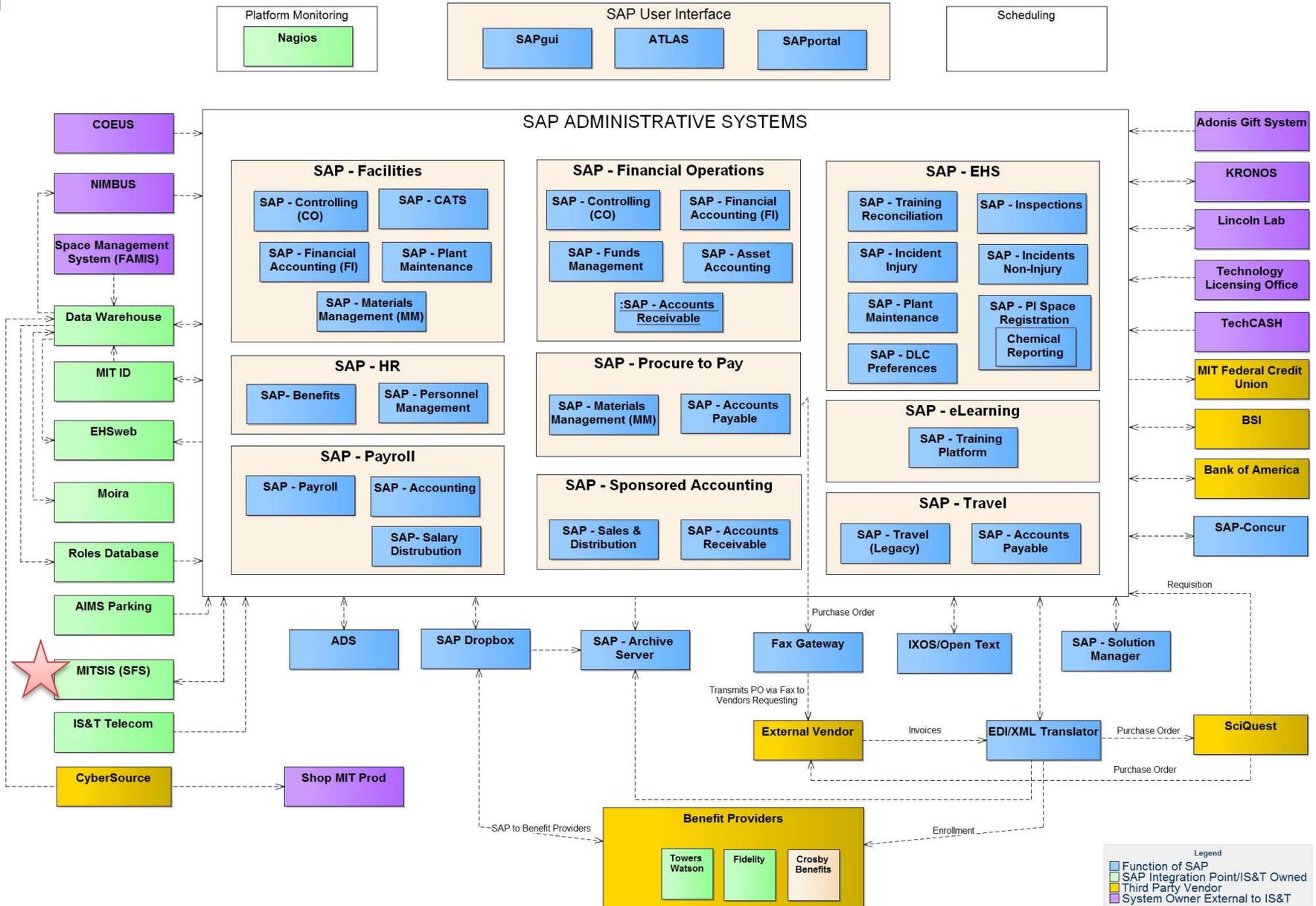
A Bird's Eye View of MIT's Campus



- History
 - Incorporated by the Commonwealth of Massachusetts in 1861
- Motto
 - *Mens et manus* – “Mind and Hand”
- Employees
 - Approximately 12,707 (including faculty)
- Faculty
 - Professors (all ranks): 1,056
 - Other teaching staff: 911
- Selected Honors (MIT Community, Current and Former)
 - 90 Nobel Laureates
 - 59 National Medal of Science winners
 - 29 National Medal of Technology and Innovation winners
 - 75 MacArthur Fellows
- Students, Academic Year 2018-2019
 - Total: 11,574
 - Undergraduate: 4,602
 - Graduate: 6,972



SAP @ MIT integrates with... a lot



Parking - Background

- Approximately 8,000 permitted parkers on campus – faculty, employees, students, alumni, volunteers, vendors, etc.
 - MIT’s urban campus makes parking a scarce resource.
 - Complex and ever-evolving business process for management.
- Migrated from custom software solution to SaaS product (AIMS Parking) in May 2016.
 - 80/20 rule – off-the-shelf product meets 80% of your needs at much lower cost.
- Reality check in 2017: How well was it really working?

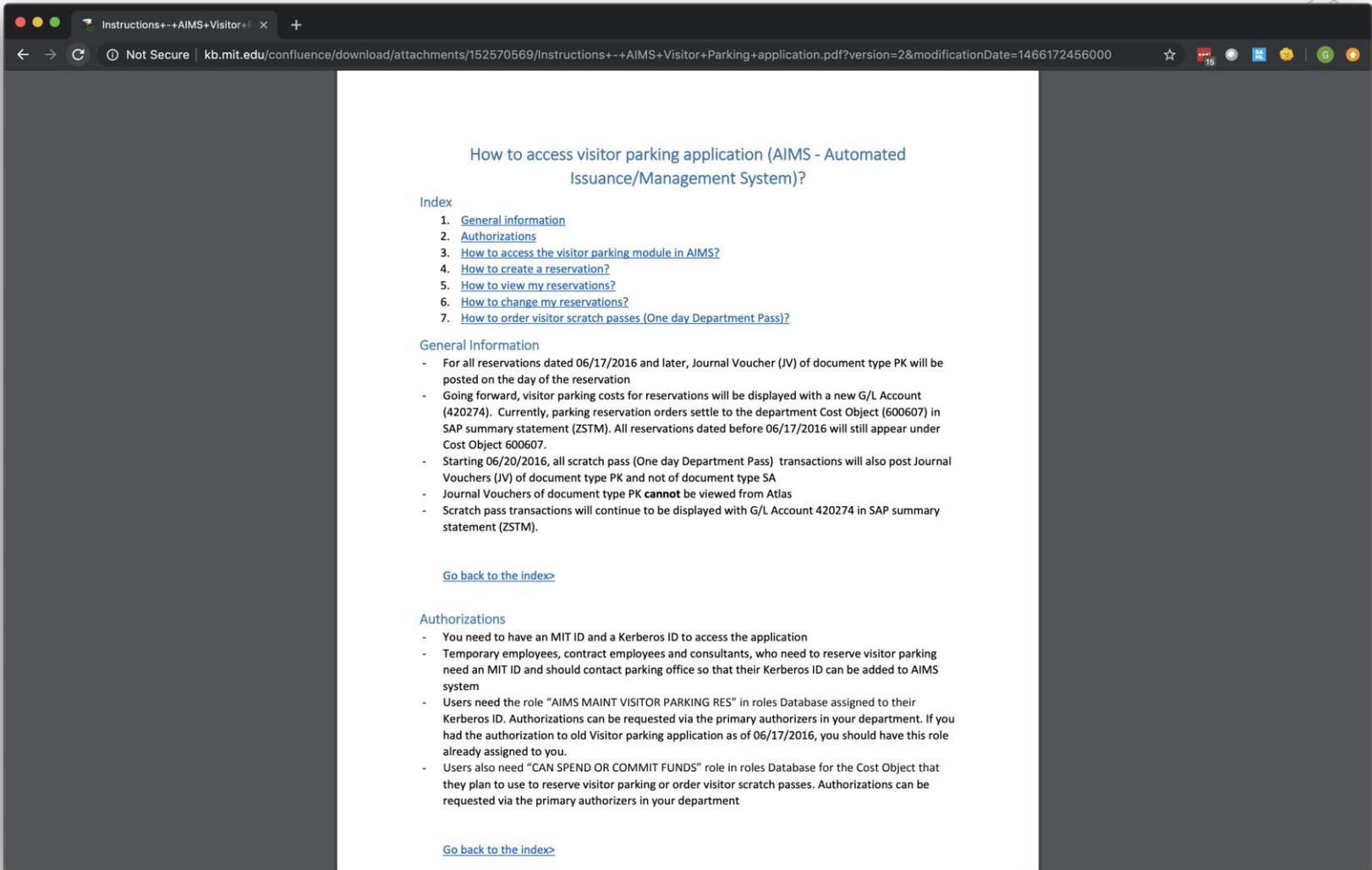


Project Drivers – Pain Points

- SaaS solution didn't mesh well with MIT's decentralized nature.
 - Designed for the needs of a commercial parking garage; popular with central office, but not with academic units.
 - No support for departmental coordinator role:
 - No roll-up reporting at departmental level.
 - Cumbersome process for reviewing individual user parking records for non-global admin.

- Existing business process required yearly renewal and distribution of physical parking stickers.
 - Manual work for every parker, every year.
 - Manual enforcement process: walk around lots and look for stickers.

So many instructions...



Instructions++AIMS+Visitor+ x

Not Secure | kb.mit.edu/confluence/download/attachments/152570569/Instructions++AIMS+Visitor+Parking+application.pdf?version=2&modificationDate=1466172456000

How to access visitor parking application (AIMS - Automated Issuance/Management System)?

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- [6. How to change my reservations?](#)
- [7. How to order visitor scratch passes \(One day Department Pass\)?](#)

General Information

- For all reservations dated 06/17/2016 and later, Journal Voucher (JV) of document type PK will be posted on the day of the reservation
- Going forward, visitor parking costs for reservations will be displayed with a new G/L Account (420274). Currently, parking reservation orders settle to the department Cost Object (600607) in SAP summary statement (ZSTM). All reservations dated before 06/17/2016 will still appear under Cost Object 600607.
- Starting 06/20/2016, all scratch pass (One day Department Pass) transactions will also post Journal Vouchers (JV) of document type PK and not of document type SA
- Journal Vouchers of document type PK **cannot** be viewed from Atlas
- Scratch pass transactions will continue to be displayed with G/L Account 420274 in SAP summary statement (ZSTM).

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Authorizations

- You need to have an MIT ID and a Kerberos ID to access the application
- Temporary employees, contract employees and consultants, who need to reserve visitor parking need an MIT ID and should contact parking office so that their Kerberos ID can be added to AIMS system
- Users need the role "AIMS MAINT VISITOR PARKING RES" in roles Database assigned to their Kerberos ID. Authorizations can be requested via the primary authorizers in your department. If you had the authorization to old Visitor parking application as of 06/17/2016, you should have this role already assigned to you.
- Users also need "CAN SPEND OR COMMIT FUNDS" role in roles Database for the Cost Object that they plan to use to reserve visitor parking or order visitor scratch passes. Authorizations can be requested via the primary authorizers in your department

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Project Drivers – Pain Points

- Minimal system integrations, particularly with student systems, i.e. enrollment, housing.
- No automated determination of eligibility rules for different types of permits.
- Frequent billing irregularities, and slow billing process due to many manual processes - 4-6 weeks after close of billing period for charges to be posted.
- Minimal enforcement of business process at system level:
 - New permit types created on-the-fly.
 - No data integrity enforced with identity systems for MIT ID # database and ID card system.



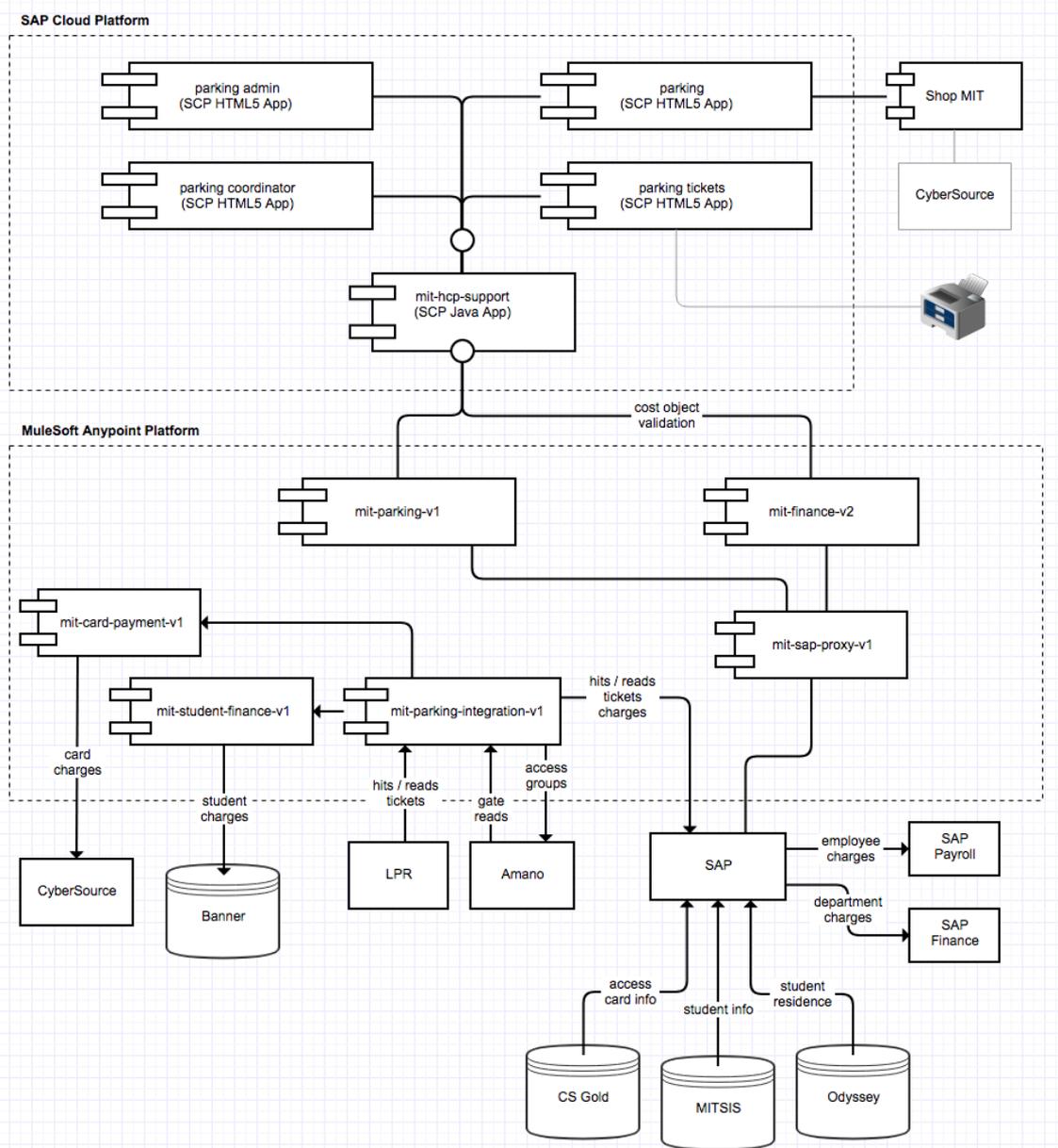
Project Goals

- Provide a system that better meets MIT's needs!
 - Support for central office / departmental coordinator split roles & responsibilities.
 - Integrated with all campus systems for automated eligibility determination.
 - Same look and feel / UX as other campus administrative applications.
 - Eliminate yearly renewal process and physical parking stickers.
- Standardize business processes and ensure data integrity.
- Align with MIT's technology architecture direction and investments: SAP ECC, SAP Cloud Platform, Mulesoft iPaaS, SAP HANA Data Mart.

- Web front end – Fiori / SAPUI5 web application hosted in SAP Cloud Platform.
- Middleware / API management – Mulesoft Anypoint hosted in AWS (MIT consumes as PaaS).
- Backends / transactional systems:
 - SAP ECC (primary SoR, payroll deduction, accounting, etc.)
 - MIT Roles DB (AuthZ)
 - MIT Moira (Identity Management)
 - MITSIS (SIS / student enrollment)
 - OdysseyHMS (housing management)
 - Banner (student finance)
 - CSGold (MIT ID card)
 - Cybersource (CC payment processing)
- Reporting – MIT Data Warehouse / SAP Data Services / Cognos.
- Physical access control & enforcement – Genetec Security Center, **LPR (license plate recognition) vehicle.**



Parking Redesign - Architecture



Parking - Before

MIT Massachusetts Institute of Technology

Home Tickets Permits Boot/Tows [Click here to login](#)

News

Welcome to the MIT parking system! Open Enrollment for 2016-2017 parking permit renewals is June 14 - July 19 2016. Open Enrollment for new 2016-2017 parking accounts and changes to existing accounts begins on July 20, 2016. Parking permits for the 2015-2016 parking year are valid from 9/15/2015 to 9/14/2016. Parkers can print a Temporary Permit, Pay or Appeal a Violation, order Parking permits or make parking account changes here. For permit details visit the Commuter Connections website <http://web.mit.edu/parking>.

Permit Types | Parking Violations | Fees

Description	Amount	Sales Begin
All Lots (2015 - 2016)	\$145.45 / Monthly Employee	Available
	\$228.57 / Monthly Student	
	\$1600.00 / Once	
All Lots (2016-2017)	\$160.00 / Monthly Employee	Available
	\$1760.00 / Once	
All Lots Reserved (2015 - 2016)	\$145.45 / Monthly Employee	Available
	\$228.57 / Monthly Student	
	\$1600.00 / Once	
All Lots Reserved (2016-2017)	\$160.00 / Monthly Employee	Available

Scroll down for more information

Lookup A Ticket
View, pay and appeal parking tickets

View My Parking Account
Click here to login and view your parking account

Visitor or Temporary Permits
Purchase temporary, daily or single use permits

Employee or Student Permits
Purchase term permits for employees or students

Employee or Student Carpools
Purchase term permits for employees or students



The screenshot shows a web browser window with the URL `https://parking.hcp.mit.edu/index.html#/NewPermit`. The page title is "MIT Parking Services" and the user is logged in as "zacheiss". The main content area is titled "Parking Request - Employee Daily" and includes a "back" link.

At the top of the form, there are two tabs: "Employee Daily" (selected) and "Carpool". Below the tabs, there is a section for "I prefer to park close to" with a text input field containing "Building W92". A note states: "The Parking & Transportation Office will make its best effort to find you a lot within reasonable walking distance based on lot demand and capacity."

The "Vehicle Details" section requires the following information:

- Year:
- Make:
- Model:
- Body:
- Color:
- License plate #:
- State/Province:

 A link for "another vehicle" is provided with the note "(at no additional cost)". A limit notice states: "Limit: 3 permanent vehicles per account. You may park only one vehicle on campus at a time."

The "Permit Details" section highlights:

- \$10 each day you park** (up to a maximum of \$1,900 annually)
- Your parking will auto-renew until you cancel or become ineligible.
- To cancel parking at any time, contact the Parking and Transportation Office.

The "Payment Method" section has two tabs: "Payroll Deduction" (selected) and "Credit/Debit Card". A note says: "Once your selection is submitted, you must contact the Parking & Transportation Office to change payment method." It also states: "The payroll option offers the advantage of a tax savings. As a pre-tax deduction, it reduces your gross pay before state and federal tax withholding is calculated." A disclaimer follows: "By submitting this form, you are agreeing to comply with MIT Parking Rules and Regulations."

At the bottom of the form, there are two buttons: "Request Parking" and "cancel".

On the right side of the page, there is contact information for the Parking & Transportation Office:

- Questions? Contact the Parking & Transportation Office
- Located in the Atlas Service Center
- Building E17-106
- Monday - Friday, 8am - 5pm
- mitparking@mit.edu
- (617) 258-6510

The footer of the page includes the MIT logo and the text "Parking & Transportation".



Feedback

Parking – Departmental View

The screenshot shows the MIT Parking Services web application interface. The browser address bar indicates the URL is <https://parking-manage.hcp.mit.edu/index.html>. The navigation bar includes 'MIT Parking Services', 'My Department', 'Dept. Vehicles', 'Visitor Parking', 'Scratch Passes', and a user profile 'zacheiss'.

My Department

Department: Information Systems & Tex

Name	Affiliation	Location	Status
Abraham, Saju	Affiliate	Riverside Area	Issued
Abruzzi, Eric	Affiliate	Riverside Area (A)	Issued
Adams, Robert J.	Employee Daily	Riverside Area	Issued
Ahern, Matt	Affiliate	Riverside Area (A)	Issued
Alvarez, Louis	Affiliate	Riverside Area (A)	Issued

[more ...](#)

Visitor Parking

[Request Visitor Permit](#)

Visitor	Location	Request Date
Joe Coen	Kresge Lot	4/17/2019
Chris Flynn, 4wall Lighting	Kresge Lot	4/17/2019
Deborah	Kresge Lot	4/16/2019
Andy Bohachewksy	Kresge Lot	4/17/2019
Andy Bohachewksy	Kresge Lot	4/17/2019

[more ...](#)

Department Vehicles

Department: Information Systems Area

Lot	Make	Model	License	Status
No Department Vehicles				

Scratch Passes

[Order Scratch Pass](#)

# of Passes	Request Date	JV #
12	4/12/2019	CUR 2019 0107741102
25	4/11/2019	CUR 2019 0107740422
25	4/11/2019	CUR 2019 0107740386

[more ...](#)

Parking – Central Admin View

The screenshot shows a web browser window with the URL `https://parking-admin.hcp.mit.edu/index.html`. The page header includes the MIT Parking Services logo and navigation links for Account, Permit, and Override. The user's name, zacheiss, is displayed in the top right corner.

The main content area is titled "Account Search" and contains a search form with two input fields: "Parker" (containing the value "996574941") and "License Plate #". Below the Parker field is a note: "(MIT ID, kerb, email, first and last name)". There are "Search" and "clear" buttons below the form.

Below the search form is a table with the following columns: Name, Kerb, MIT ID, Email, License Plate #, Transponder #, Access Card #, and Has Parking. The table contains one row of data for Garry P. Zacheiss.

Name	Kerb	MIT ID	Email	License Plate #	Transponder #	Access Card #	Has Parking
Zacheiss, Garry P	zacheiss	996574941	zacheiss@mit.edu				No



What about “cloud first”?

- Moving away from a SaaS platform to a custom application may seem like a step backwards...
- Serving the community’s needs has to come first!
- New systems involved no new on-premises components; leveraged existing cloud investment:
 - Web UI (SCP)
 - Mulesoft (AWS)
 - SAP ECC (HANA Enterprise Cloud)
 - Other systems of record (VMware VMC)



Project Staffing and Timeline

- Staffing (software development):
 - Project Manager
 - Business Systems Analyst
 - Architect
 - UX / Graphic design services
 - 2 Developers (HTML/CSS/JS, Java, ABAP)
 - 1 QA Engineer (part-time) – emphasis on performance testing
 - 1 Business Intelligence Engineer (part-time)
 - 1 report writer (part-time)
 - Cast of thousands: Subject Matter Experts, SAP BASIS, etc.

- Timeline:
 - Kickoff: December 2017
 - Go-Live: September 2018



- Project went live in Fall 2018 – Success!
- SAP doesn't lock you into a single-vendor IT ecosystem.
 - Supports being part of a heterogeneous technology landscape.
 - SAP enabled flexibility, didn't hinder it.
- Make the right foundational investments.
 - Investments in Cloud Platform, integration platform, and HANA Data Mart all paid off in speed of project implementation.
- No technology strategy is one-size-fits-all; know your business and your community.
- You can **never** ask enough questions about the business process – edge cases are everywhere!

Next Steps

- Completed post go-live “hypercare” period for phase 1 deliverables.
- Phase 2 underway:
 - LPR cameras for gated lots.
 - Reporting / analytics enhancements.
 - Self-service access to lot capacity?
- SAP Cloud Platform and Mulesoft continue to be incorporated into all future custom software development efforts.
 - Upcoming: enhanced sick / vacation time tracking and reporting for exempt employees.

Questions?



Thank you

