

From Custom COTS to Cloud: A Case Study in Solution Architecture

Prairie Dev Con 2022 // David Wesst



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COTS

=

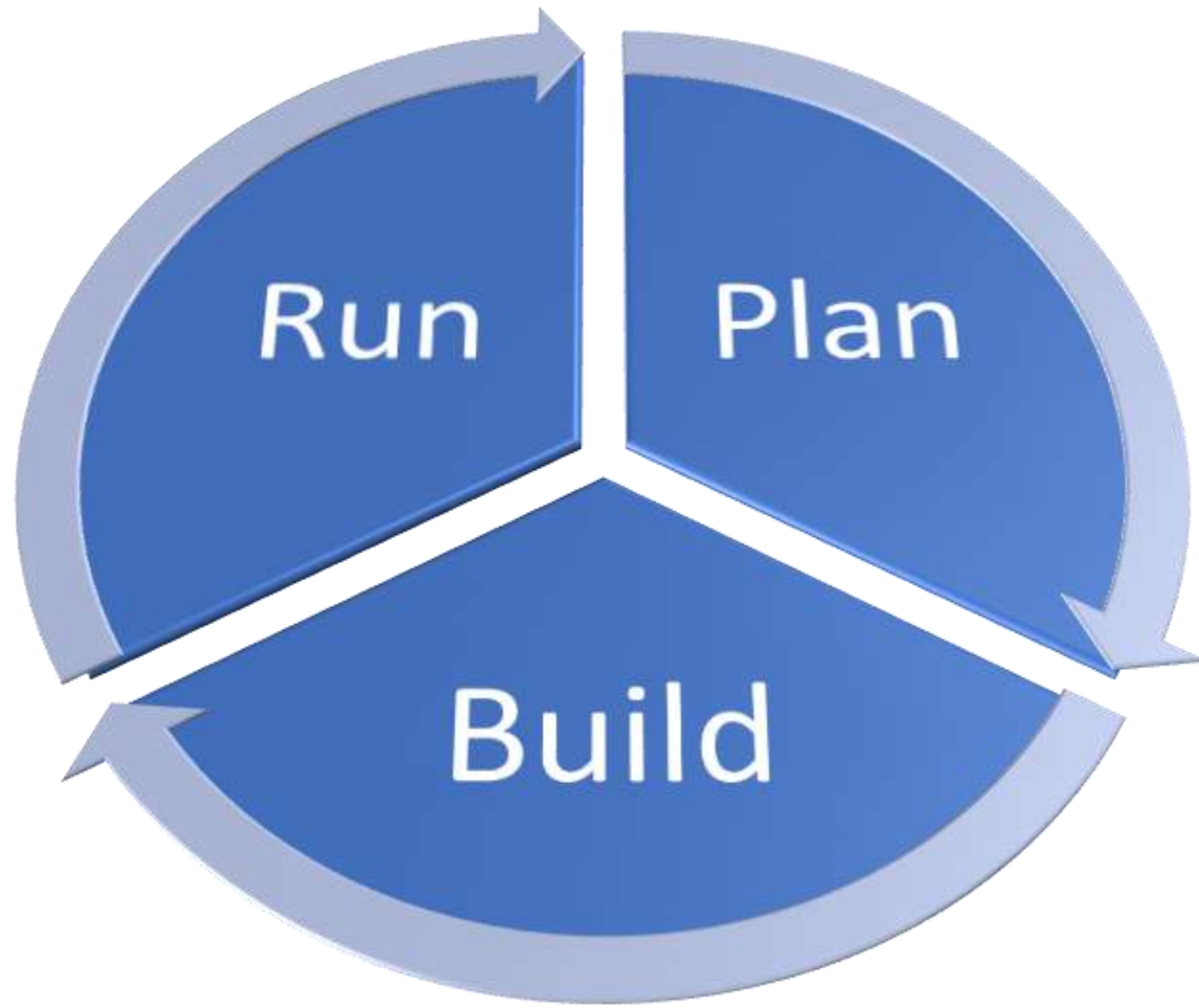
Commercial Off The Shelf

In the 1990s, many regarded COTS as extremely effective in reducing the time and cost of [software development](#). COTS software came with many not-so-obvious tradeoffs— a reduction in initial [cost and development time](#) over an increase in software component-integration work, [dependency on the vendor](#), security issues and incompatibilities from future changes.

Wikipedia (October 2, 2022),

https://en.wikipedia.org/wiki/Commercial_off-the-shelf







?????

SaaS

IT SOLUTION ARCHITECTURE





Photo by [Bob Fisher](#) on [Unsplash](#)

The background is a teal gradient. On the left side, there are several white, stylized clouds of various sizes, some overlapping. These clouds appear to be hanging from thin white lines, suggesting they are part of a mobile phone or tablet interface. The clouds have soft shadows, giving them a 3D effect.

Summary

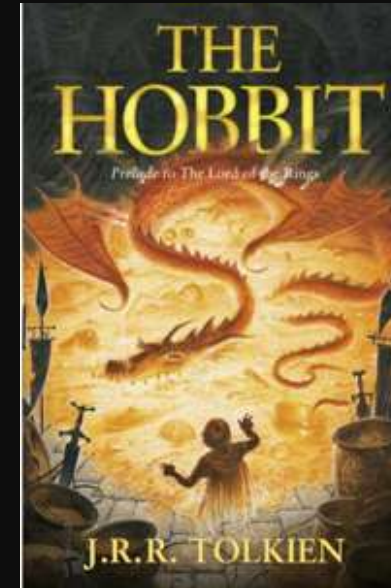
- The Journey Custom COTS (Banner) to SaaS Cloud
- How could you possibly even get there?
- What did I do to help get us there?

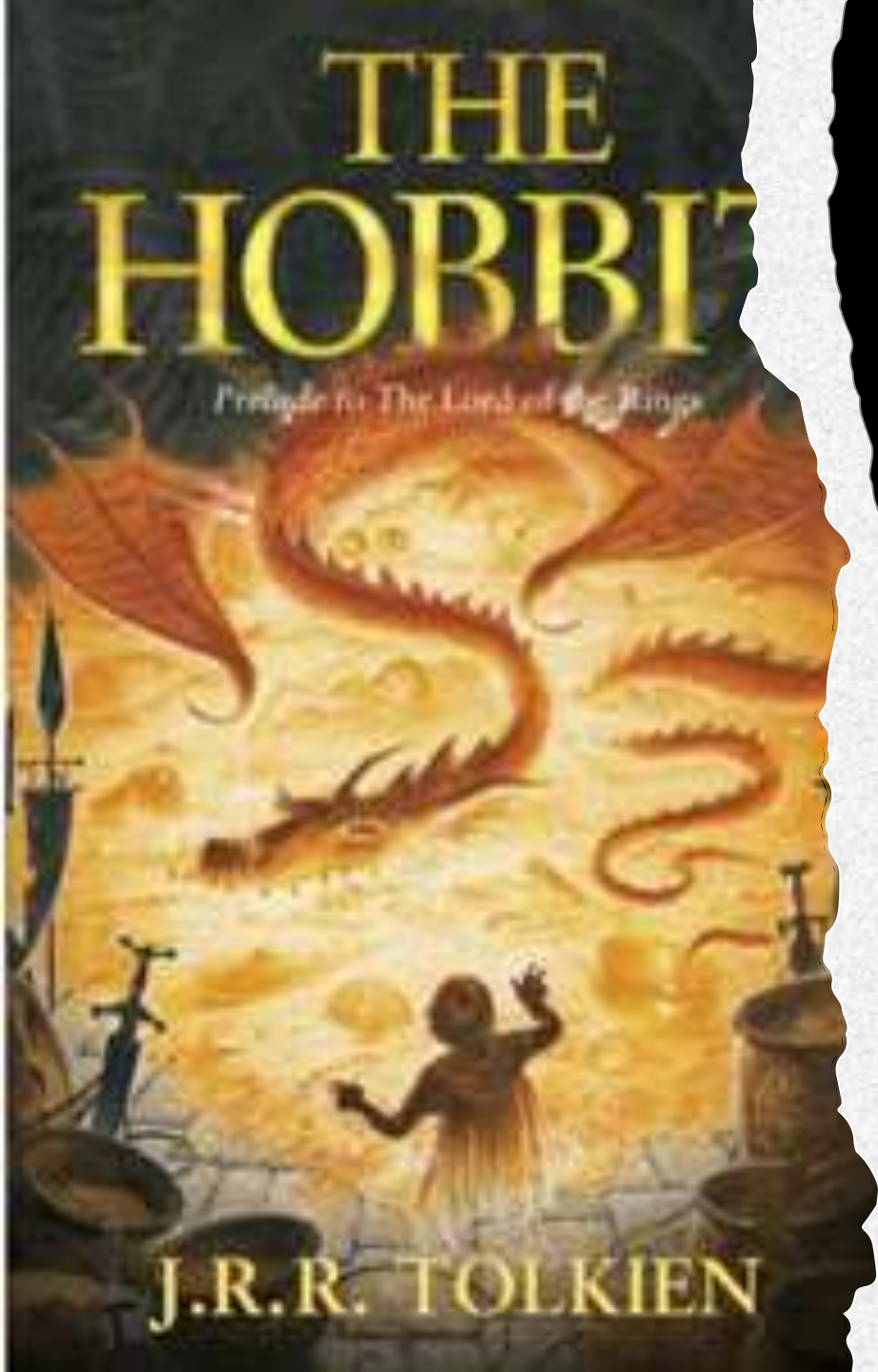
Takeaways (What I hope you learn)

- Understand your Environment
- Respect the Culture
- Prepare for Opportunity
- Change is Hard (Involuntary Change is Harder)
- Progress is Progress
- Build Trust, Acknowledge Risk, Practice Empathy
- Customer-Centric Conversations

Outline

- Part 0: Where it started...
- Part 1: Where it changed...
- Part 2: Where we went...
- Part 3: Where we are going...





Where it
started...

Part 0

FREEDOM



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University of Manitoba holds funeral for mainframe

Contributor 8:45 AM CST • December 19, 2007

Comment

[youtube http://www.youtube.com/watch?v=jEFPPeUJPEA&rel=1&border=1]

The University of Manitoba recently held a funeral for its 47-year old IBM 650 mainframe — four people had to carry the almost 2,000-pound computer as *Amazing Grace* played in the background. This video is pretty funny and it's my opinion that all your favorite technology items should receive similar ceremonies.

[How to really bury a mainframe](#) [NetworkWorld] via [Slashdot](#)

More TechCrunch



Home ▾ Data Center



LAYER 8

By Michael Cooney, Senior Editor, Network World • DEC 17, 2007 4:50 PM PST

About

Layer 8 is written by Michael Cooney, Senior Editor with Network World.

OPINION

How to really bury a mainframe



HPE GreenLake

Open up opportunities.

[Learn more](#)

Some users have gone to great lengths to dispose of their [mainframe](#) but [few](#) have gone this far. On November 21, 2007, the [University of Manitoba](#) said goodbye to its beloved 47-year-old IBM 650 mainframe [Betelgeuse](#) by holding a New Orleans style



But now we must lay you under the flora, because we have to go deal with this bloody Aurora. So, we commit your parts to be recycled. Earth to Earth Ashes to Ashes Dust to Dust To the god of computers, please bless it and keep it And give it grace and peace But please do not resurrect it.

It leaves behind some 25 servers that are now needed to run these systems and will be lovingly remembered by users from across campus.

The IBM 650 was installed in the year 1960 and went through many upgrades and changes to the final hardware of an Amdahl Millennium 1015. In its many forms the mainframe has supported the Student Records systems, Payroll, Human Resources, Finance, Research, student labs, etc.

The users you were always able to please, with a little training they could enter with ease, all the data they needed in 2 or 3 screens instead of the 57 in VIP.

[In Loving Memory of the Mainframe \(aka IMS\) \(archive.org\)](#)

[In Loving Memory of the Mainframe \(aka IMS\) \(archive.org\)](#)





Everyone Else

Leadership



Main Menu

Welcome, David E. Wesst, to Aurora! Last web access on Dec 09, 2016 at 01:06 pm

Important Student Email information:

Please note, your [UM Student Email account](#) is used for all university email communications. Make sure to check it regularly to avoid missing messages.

Don't have an account yet? [Learn more about the student emails and how to activate your UM email account on our Student Email Policy page.](#)

Personal Information

Change your PIN. Update address and contact information (students only).

Enrolment & Academic Records

Register, View Fee Account, View Transcript, View Financial Aid, Obtain Tax Information, and more...

Ask UManitoba

Answers to the most frequently asked questions

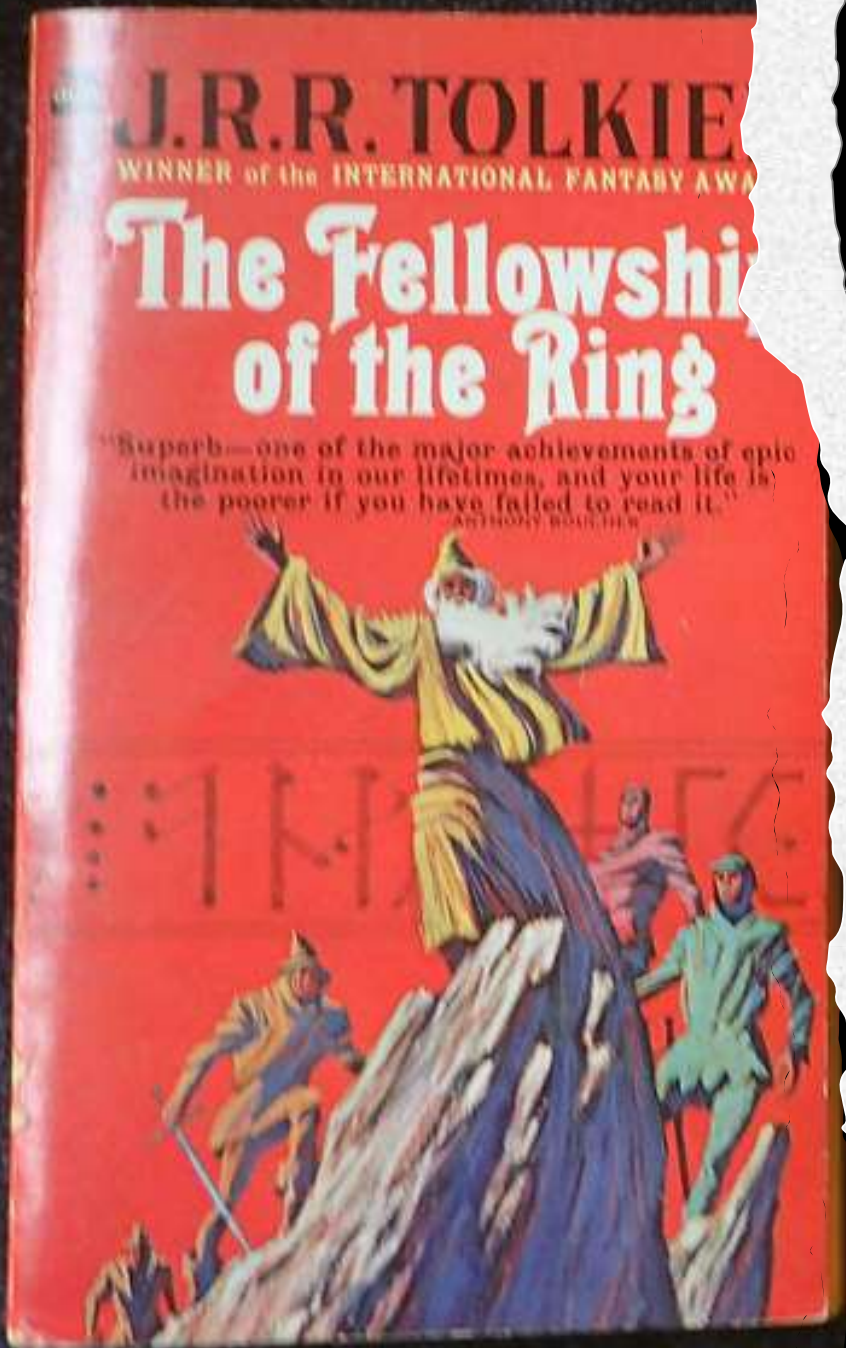
Desktop Client

Web Client

INB

SSB

Oracle Database



Where it
changed...

Part 1

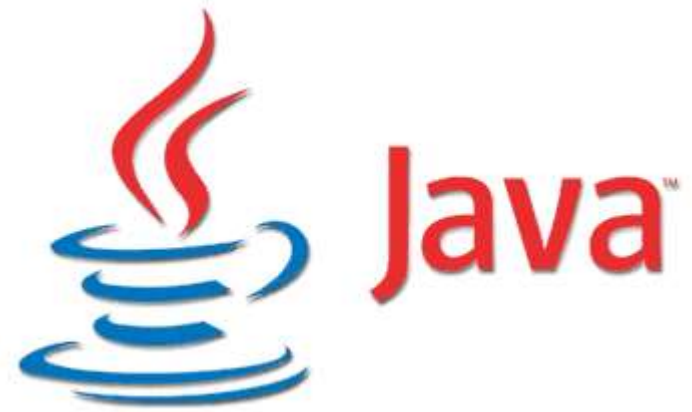
~~Desktop~~
Web Client

Web Client

~~INB~~
Admin Pages

SSB

Oracle Database



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Everyone Else





Photo by [Annie Spratt](#) on [Unsplash](#)

TRUST

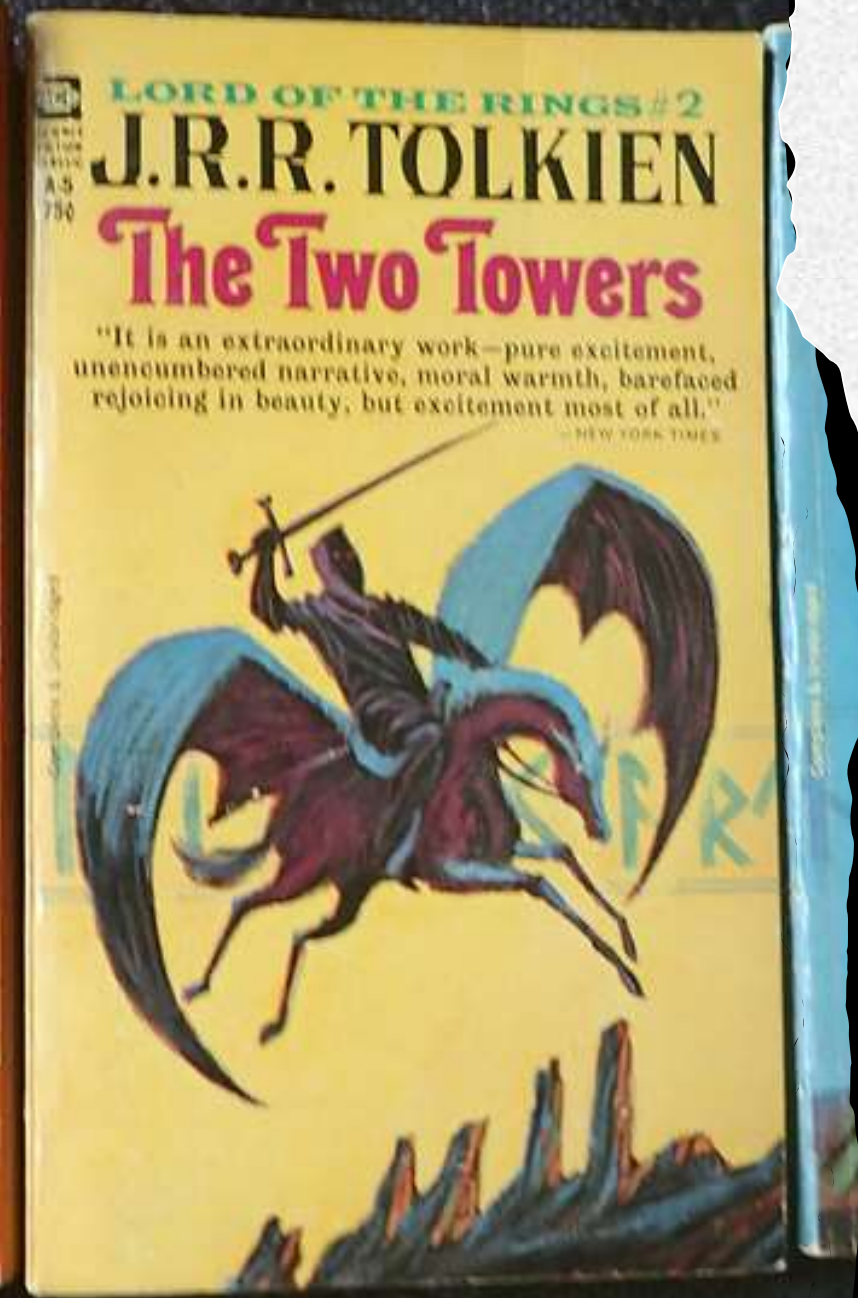
Photo by [Joshua Hoehne](#) on [Unsplash](#)



bt.tn

Press
when full





Where it went...

Part 2









**Risk
&
Capabilities**



Technology

SSB 8 - Customization Map (High Level)

	1. Personal Information	2. Enrolment and Acad Records	3. Advisor Services	4. Faculty Support Services	5. Student Reports	6. Student Awards and Fin Aid	7. BSAC	8. Faculty Services	9. Reg Office Svcs	10. Admissions	11. Residence Services	12. Other Services	13. Mobile App
Level 1	Personal Information 1	Enrolment and Academic Records 2	Advisor Services 3	Faculty Support Services 4	Student Reports 5	Student Awards and Financial Aid 6	BSAC 7	Faculty Services 8	Registrar's Office Services 9	Admissions 10	Residence Services 11	Other Services 12	SSB / Mobile App 13
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Baseline

Modifications

Customizations

Data Flow Amount

Small = Single Query/View

Medium = Multiple tables/views

Large = Schema Level or Multiple Files

Totals (Data Flow)

Small:	24
Medium:	11
Large:	30

Frequency Run

Multiple Times Daily

Daily

On-Demand

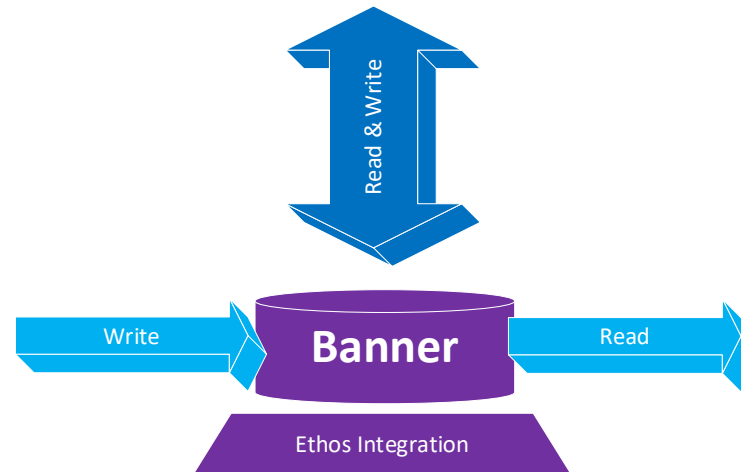
Totals (Frequency)

Multiple Times Daily:	5
Daily:	36
On Demand:	4

- Batch AR Interfaces (5)
- Batch JV Interfaces (9)
- EPIC (Ariba)
- InfoEd
- Libraries
- Missouri Book Systems

- Ad Astra
- Auradata
- BDM
- BSA
- Concur
- Core
- Exams Scheduling
- FAST
- RADIUS
- Slate
- StarRez
- Student Aid (Banner)
- TD Bank
- UMLearn
- VIP
- Workflow

- ALMA
- Argos
- Booklist
- Cheques
- CourseLeaf
- Electronic Payments
- eRA Suite
- eTransfer
- IDWorks
- Intelligence
- LDI
- Library Holds
- ODS
- Parking
- Raiser's Edge
- RAS
- RBC
- Sherpa
- Stats Canada
- UMAchieve
- UM Mobile App
- UMES
- UMPlan (PBCS)



TRUST

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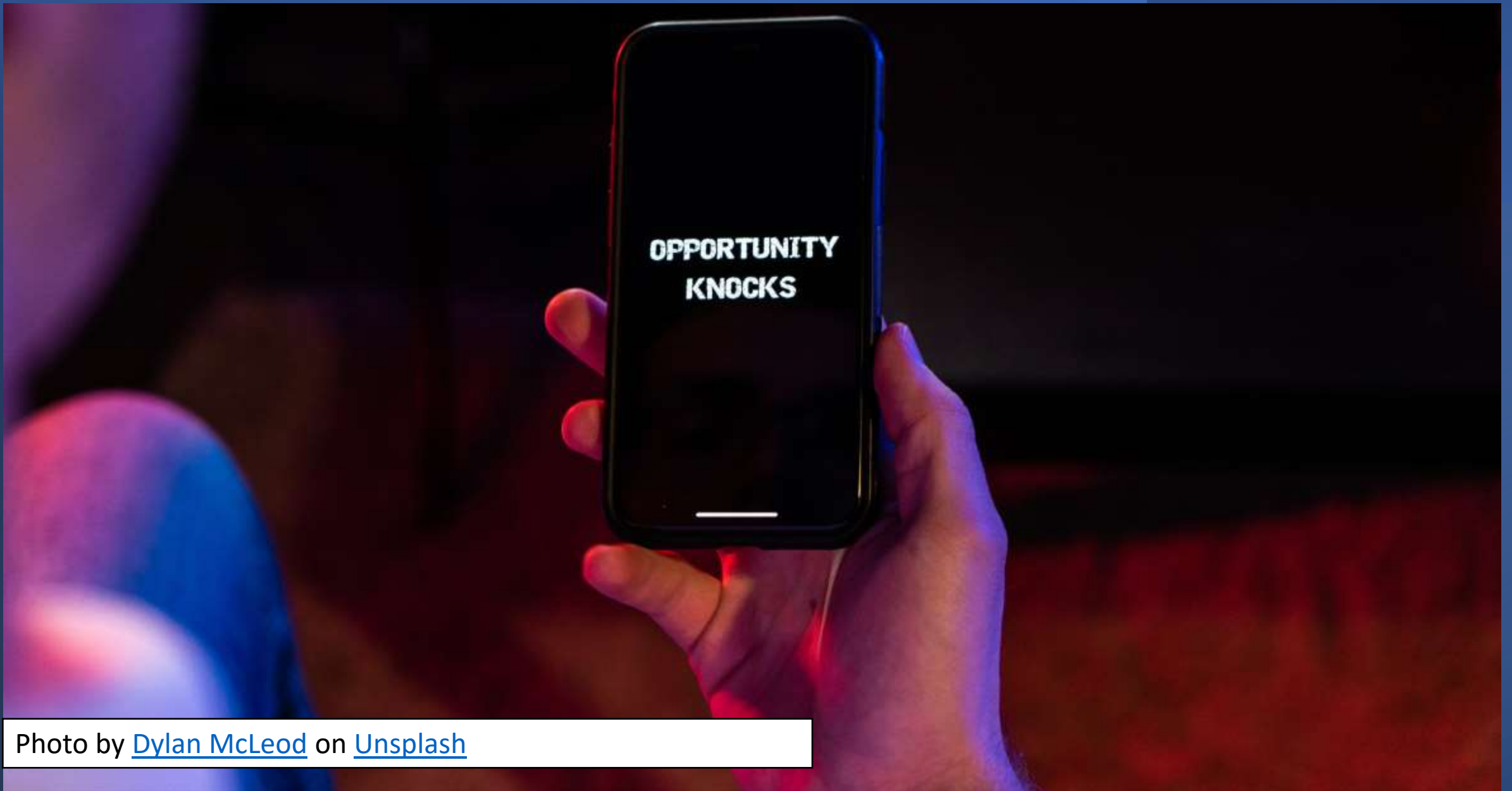


Photo by [Dylan McLeod](#) on [Unsplash](#)



Everyone Else



~~Desktop~~
Web Client

Web Client

~~INB~~
Admin Pages

SSB

Oracle Database

~~Desktop~~
Web Client

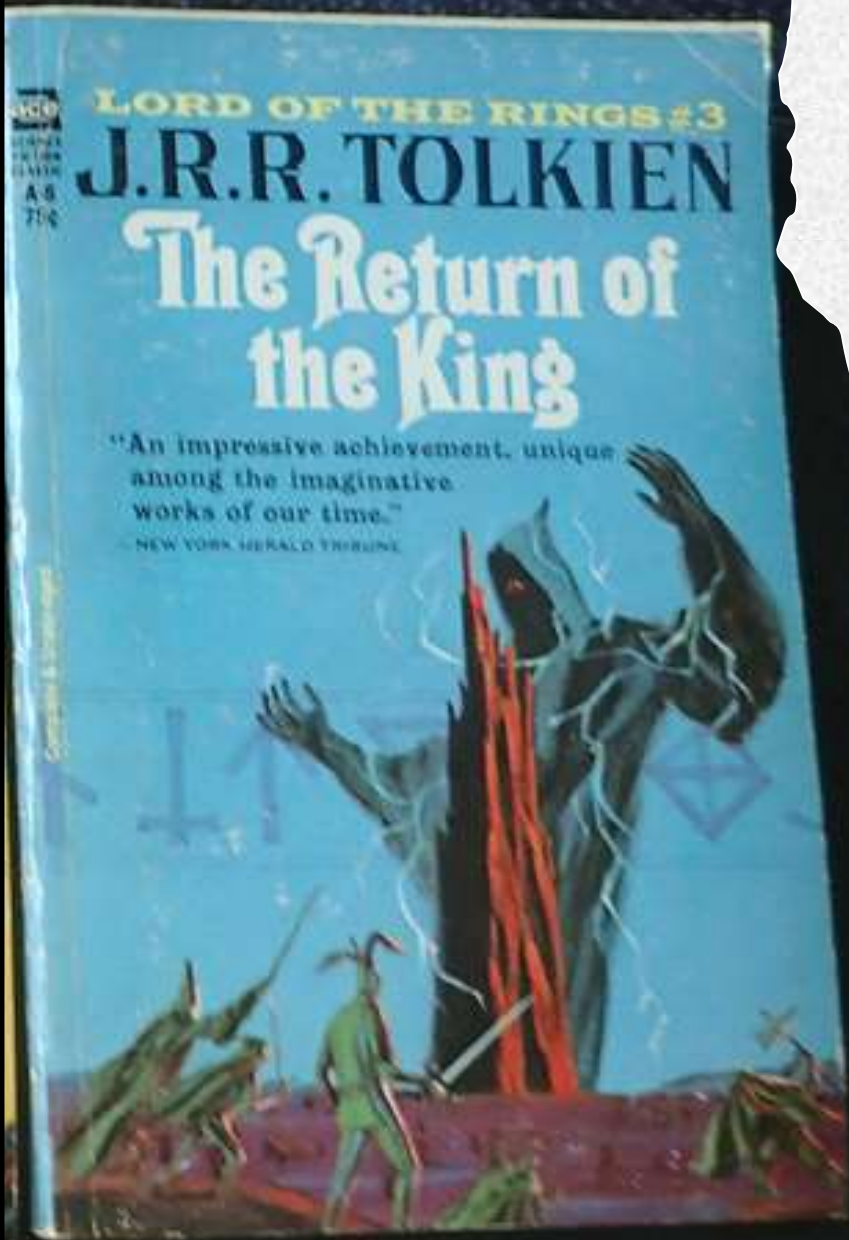
Web Client
(vNext)

~~INB~~
Admin Pages

SSB (vNext)

Oracle
Database

GraphQL API



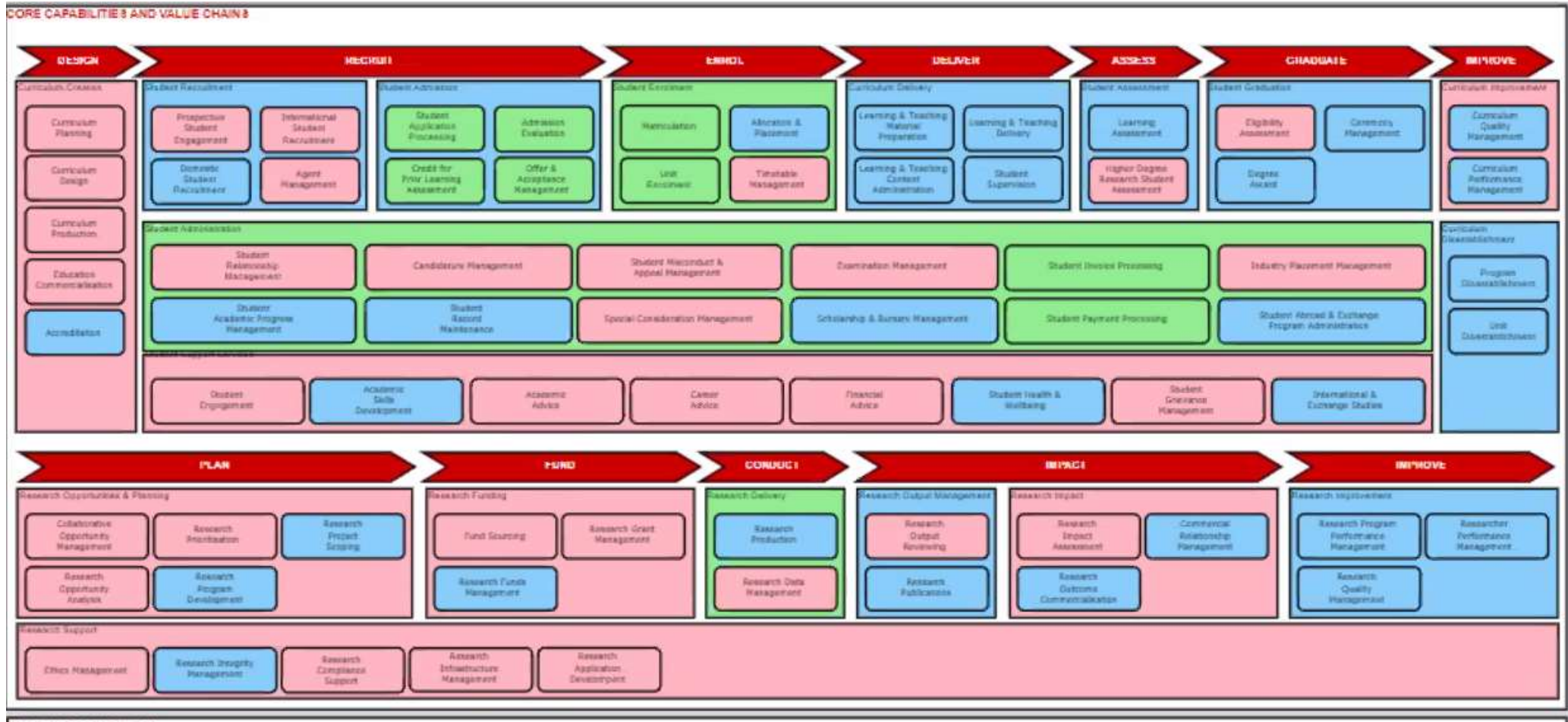
Where we are
going...

Part 3



***sorta**





U of M Capability Map Concept

Estimated number of features for Phase 1 – Student Experience

Personal information management

- 14 user features
- e.g. change emergency contact information

Enrollment and Academic Records

- 61 user features
- e.g. search for classes available in Fall 22/23

Student support/Advisor management

- 30 user features

Estimated Total – 105 user features

SSB 8 - Customization Map (High Level)

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Baseline

Modifications

Customizations

Program Overview - DRAFT

Phase 1 – Student Experience

Focused on moving and modernizing the current Student Experience from SSB 8 to SSB 9 + Experience + Advisor experience enhancements

Phase 2 – Faculty and Staff Experience

Focused on moving and modernizing the current Staff & Faculty experiences from SSB 8 to SSB 9 + Experience + Workflow + Reporting

Phase 3 – Integrations

Modernize and streamline over 100 integration points into Banner

Technology refresh:

BDM, Ethos, Infrastructure upgrade, Workflow, Email authentication

Planning Approach 1/2 – DRAFT



- **Rolling Wave planning**

- There are too many gaps to create a detailed plan upfront
- As the project team work to identify details, plans will be updated helping solidify the development of each of the program phases.

- **Roadmap**

- Develop a high-level roadmap with target delivery dates for Phase 1 & Technology Refresh.
- Roadmap will be refreshed for every checkpoint

Proposed Program Governance

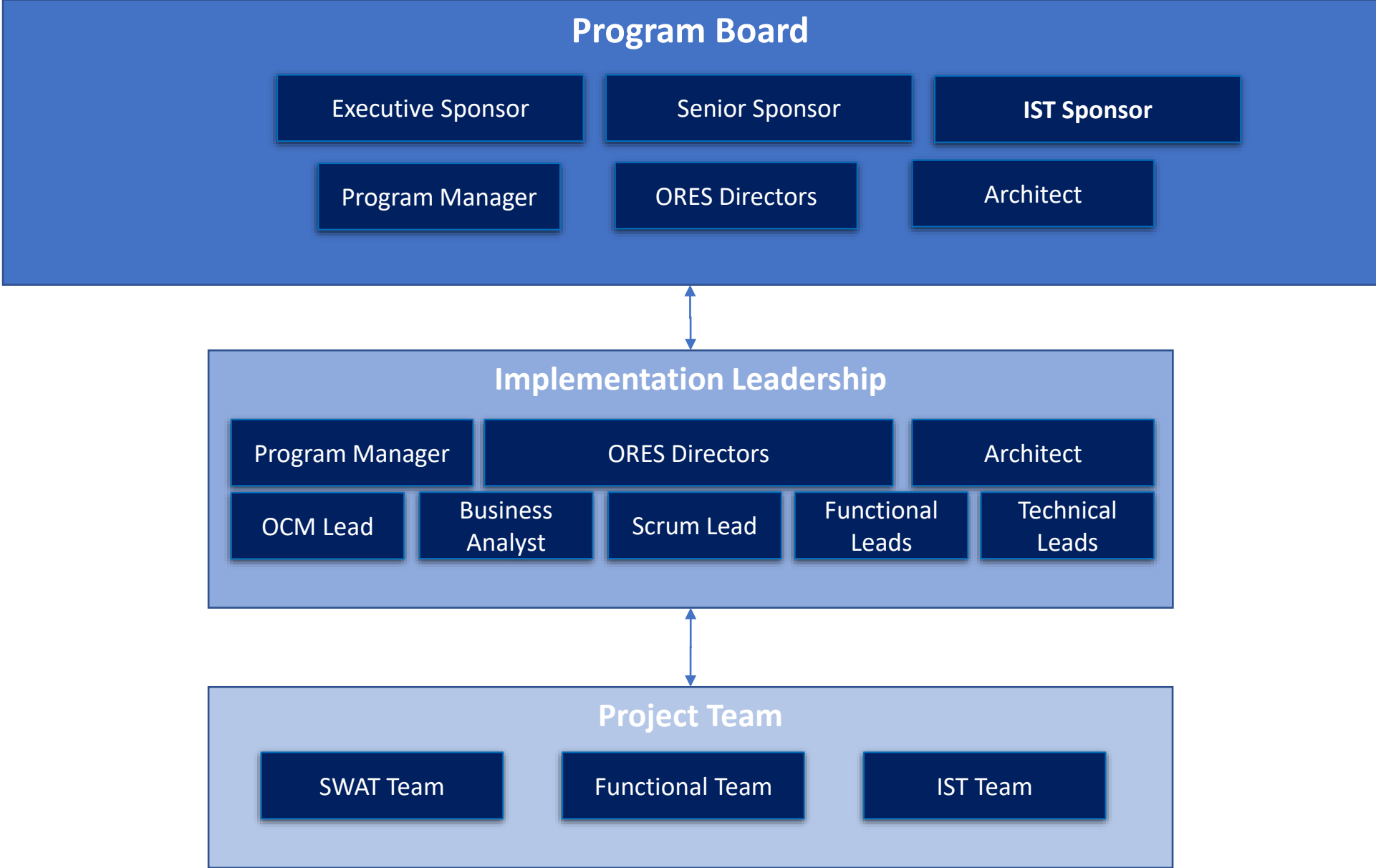






Photo by [Annie Spratt](#) on [Unsplash](#)

Takeaways (What I hope you learn)

- Understand your Environment
- Respect the Culture
- Prepare for Opportunity
- Change is Hard (Involuntary Change is Harder)
- Progress is Progress
- Build Trust, Acknowledge Risk, Practice Empathy
- Customer-Centric Conversations

Questions & Contact Info

- David Wesst
- Solution Architect
- University of Manitoba
- <https://www.davidwesst.com>
- Slides available here (and via PrDC website later)





Questions & Contact Info

- David Wesst
- University of Manitoba
- <https://www.davidwesst.com/>
- dw@davidwesst.com
- david.wesst@umanitoba.ca