



The top section of the slide features a photograph of a white sign for MacEwan University with a red logo, set against a background of green trees and a blue sky. To the right of the photograph is a red square containing the HEUG Canada logo, which consists of a white maple leaf above the text 'HEUG' and 'CANADA' in white.

**QUERY ACCESS SERVICES —
THREE USE CASES** | SESSION 6045
NOV 14, 2018

CANADA ALLIANCE 12-14 NOVEMBER 2018

PRESENTERS

Timothy Ni

Manager, Application
Development, Student Systems
Concordia University
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SIS Teams

Development Team

- 9 including myself

Admin Team

- 2 ps admins + 1 dba

Business Analyst & Training Team

- 11 BAs and Trainers

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- Three separately managed teams, 2 housed in IT and 1 in registrar.
- We work very closely together.
- Dev team comes from .NET, ASP, HTML ecosystem. Comfortable and understand web technologies. (maybe better than PeopleSoft!)



CONCORDIA UNIVERSITY, MONTREAL, QC

2018 Enrolment Count : 50 315
• Undergraduate : 37 053
• Graduate : 9 040
• Continuing Education : 4 222

2018 UFTE Count : 29 430
Faculty & Staff : 6450

Two Campuses

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ORGANIZATION & ORACLE

Current Production Environment

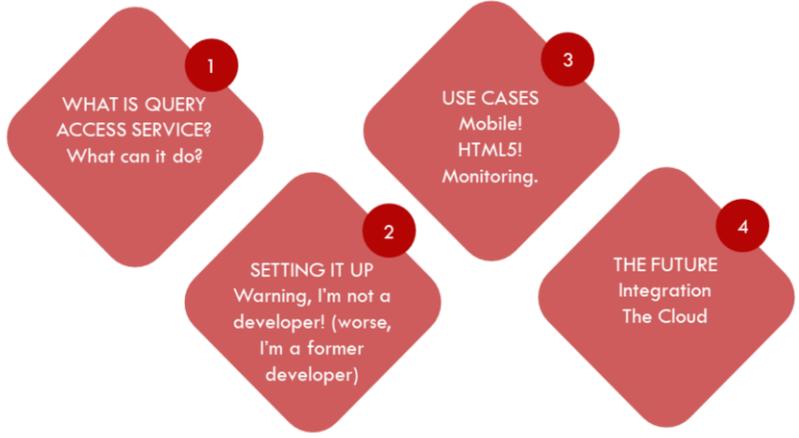
- CS 9.2 PUM Image 5
- PeopleTools 8.55.15
- Oracle RDBMS 12c

Upgraded to 9.2 April 1st 2018

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- We went live with Campus Solutions January 2015.
- We have Portal Interaction Hub, but it isn't leveraged like it should be. It's just a collection of links. Concordia will be looking at an alternative solution in 2019.
- Prior to Campus Solutions, we had an house system written in ASP.NET, C#, ASP Classic, and Visual Basic. System was customized to existing processes.

OVERVIEW



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1. WHAT IS QUERY ACCESS SERVICES?

- What is it?
- What can it do?
- What's useful?

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WHAT'S QUERY ACCESS SERVICES?

Query Manager/Query Viewer

+ Integration Broker

= "No code" API.



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Query Access Services is taking the things you can do in Query Manager and Query Viewer

- Exposing these capabilities through Integration Broker
- > To Create a No-Code API infrastructure for PeopleSoft. Since this all done through configuration
- > it's DELIVERED!

QAS SERVICE OPERATIONS



4 Service Services Operations

SOAP or REST

1 extremely useful service operation

3 niche service operations

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- REST was introduced in 8.55. A bit late for Concordia.

1. QUERY CREATION SERVICE

RESTful Query Creation Services

This table lists the Query Creation Services:

Service Operation Name	Description
QAS_RECORDS_REST_GET	Returns the list of records, along with descriptions, that are accessible to the user.
QAS_RECORD_DEFN_REST_GET	Returns the definition of a given record, including field descriptions and key information.
QAS_HIERARCHY_RECORDS_REST_GET	Returns the list of hierarchy records, if any, along with their descriptions.
QAS_RELATED_RECORDS_REST_GET	Returns the list of related records of all the fields in the record.
QAS_FIELDS_REST_GET	Returns the fields from all records that are accessible to the user.
QAS_FIELDS_PROPS_REST_GET	Returns the properties of a given field.
QAS_TREES_REST_GET	Returns the list of PeopleSoft trees that are accessible to the user.
QAS_TREE_DETAILS_REST_GET	Returns the tree details, including setID, effective date, and the list of all the nodes.
QAS_QUERY_DELETE_REST_DELETE	Deletes the query from the PeopleSoft database.
QAS_SAVE_QUERY_REST_POST	Validates and verifies XML-format query and saves the query in the PeopleSoft database.

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- We don't use this one, but it's kind of interesting.
- You can create queries through an API! If you want to build a better Query Manager, your given the tools to do so.
- I tried to think of a use case for this; perhaps if you needed to dynamically create a query based on some external dataset...

DISSECTING THE MESSAGE BODY

```
SELECT A.MESSAGE_SET_NBR, A.DESCR FROM PSMGSETDEFN A
```

```
<soapenv:Envelope xmlns:soapenv=http://schemas.xmlsoap.org/soap/envelope/  
xmlns:qas=http://xmlns.oracle.com/Enterprise/Tools/schemas/  
QAS\_QUERY\_SAVE\_REQ\_MSG.VERSION\_1>
```

```
<soapenv:Header/><soapenv:Body><qas:QAS_QUERY_SAVE_REQ_MSG><!--1 or more repetitions-->
```

```
<RECORD>
```

```
<RCDNUM>1</RCDNUM>
```

```
<RCDNAME>PSMSGSETDEFN</RCDNAME>
```

```
<CORRNAME>A</CORRNAME>
```

```
<JOINTYPE></JOINTYPE>
```

```
<JOINRCDALIAS></JOINRCDALIAS>
```

```
<JOINFIELD></JOINFIELD>
```

```
<RCDSELECTNUM>1</RCDSELECTNUM>
```

```
</RECORD>
```

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- To get an understanding of how this would work, let's dissect would you would send to the SOAP save query service operation.
- So in this case, which I stole from PeopleBooks, we want to create a psquery on the system that will grab 2 fields from psmgsetdefn.
- You can see where we define the source record in the RCDNAME node
- Since the query has no joins, we'd leave these fields blank

DISSECTING THE MESSAGE BODY

```
SELECT A.MESSAGE_SET_NBR, A.DESCR FROM PSMMSGSETDEFN A
<FIELD>
<FIELDNUM>1</FIELDNUM>
<FIELDNAME>MESSAGE_set_nbr</FIELDNAME>
<FIELDRCNUM>1</FIELDRCNUM>
<DESCR></DESCR>
<AGGREGATE_TYPE>None</AGGREGATE_TYPE>
<HEADING_TYPE>RFT Short</HEADING_TYPE>
<HEADING></HEADING>
<COLUMNNUM>1</COLUMNNUM>
<ORDERBYNUM>1</ORDERBYNUM>
<ORDERBYDIR></ORDERBYDIR>
<FIELDSELECTNUM>1</FIELDSELECTNUM>
<EXPRESSION_AS_FIELD></EXPRESSION_AS_FIELD>
</FIELD>
```

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- Here we define the fields we'd be interested. I've shown the MESSAGE_SET_NBR field
- This would be repeated for the DESCR field

DISSECTING THE MESSAGE BODY

```
<SELECT>
<SELECTNUM>1</SELECTNUM>
<PARENTSELECTNUM>0</PARENTSELECTNUM>
<SELECTYPE>Main</SELECTYPE>
<QRYDISTINCT></QRYDISTINCT>
</SELECT>
<QUERY_NAME>SimpleQuery</QUERY_NAME>
<DESCRIPTION>test a simple query</DESCRIPTION>
<DESCRLONG>Simple Query with one table and 2 fields</DESCRLONG>
<QUERY_OWNER>Public</QUERY_OWNER>
</qas:QAS_QUERY_SAVE_REQ_MSG>
</soapenv:Body>
</soapenv:Envelope>
```

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- Finally we are end of the message body we would be POSTing to the server
- The select node is reserved for subqueries, which the query we would be making doesn't have
- And we add all the things you would need to do in Query Manager, give it a name, description, and whether it was public or private

2. QUERY SECURITY SERVICE

SOAP Query Security Services

This table lists the Query Security Services:

Service Operation Name	Description
QAS_AUTHTOKEN_OPER	Returns the user ID based on the PS Token passed in.
QAS_LISTROLE_OPER	Returns the list of roles, along with descriptions.
QAS_LISTUSER_OPER	Returns the list of users, along with descriptions.
QAS_LISTROLEUSERS_OPER	Returns the list of users for a given role, along with descriptions.
QAS_LISTUSERROLES_OPER	Returns the list of roles for a given user, along with descriptions.
QAS_LOGIN_OPER	Enables the client application to sign on to the PeopleSoft database.

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Supporting services, we don't use this. Though I think we could probably find a use for QAS_AUTHTOKEN_OPER as he have something similar built prior to our use of QAS.

3. QUERY METADATA SERVICE

RESTful Query Metadata Services

This table lists the Query Metadata Services:

Service Operation Name	Description
QAS_LISTQUERY_REST_GET	Returns the list of queries, along with the query descriptions, and owner type.
QAS_QUERY_DETAILS_REST_GET	Returns the details of an existing query in XML format.
QAS_LISTQUERYFIELDS_REST_GET	Returns a list of fields for a given query.
QAS_LISTQUERYPROMPTS_REST_GET	Returns a list of prompts used in a specific query.
QAS_GETPROMPTTABLEVAL_REST_GET	Returns a list of field values for a given prompt.
QAS_GETXLAT_REST_GET	Returns the translate value for a given field.

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- These are read only operations that pull metadata about existing queries on the system.
- Again, we don't use this one. But maybe someone will find a good use for this.
- Weird fact. The REST version has 1 additional function not found in SOAP version.

4. QUERY EXECUTION SERVICES

SOAP Query Execution Services

This table lists service operations used to execute a query:

Service Operation Name	Description
QAS_CANCELQUERY_OPER	Returns the status of query cancellation.
QAS_QUERYSTATUS_OPER	Returns query execution status.
QAS_EXECUTEQRYSYNC_OPER	Returns query result.
QAS_EXECUTEQRYSYNC_OPER	Returns query result.
QAS_EXECUTEQRYSYNCPOLL_OPER	Runs the query through process scheduler and returns the query instance ID. The service operation QAS_GETQUERYRESULTS_OPER is used to retrieve the results.
QAS_GETQUERYRESULTS_OPER	Used to return the query results when the query is executed on the PeopleSoft database using QAS_EXECUTEQRYSYNCPOLL_OPER.
QAS_EXECUTECPQSYNC_OPER	Returns the composite query result in a WebRowset format. This operation is useful for end users who do not have database connection information to establish ODBC connections.

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- Save the best for last. Most relevant and useful for Concordia. It's the star of our show, Query Execution Services.
- Query Execution Services lets you call EXISTING psqueries on your system through delivered service operations.
- Any psqueries are turned into webservices without a single line of code.
- Synchronous or asynchronous option; since we are using them for online apps, we're using them synchronously.
- Results can be saved to file
- Gotcha: PSQASRUN will get large unless you call QAS_CANCELQUERY_OPER after every request OR run QASPURGE appengine

QAS_EXECUTEQRYSYNC_OPER

```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:
<soapenv:Header xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/">
  <wss:Security xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:wss="">
    <wss:UsernameToken>
      <wss:Username>PSTIM</wss:Username>
      <wss:Password>PASSWORD123</wss:Password>
    </wss:UsernameToken>
  </wss:Security>
</soapenv:Header>
<soapenv:Body>
  <qas:QAS_EXEQRY_SYNC_REQ_MSG>
    <qas:QAS_EXEQRY_SYNC_REQ>
      <QueryName>CU_ONLFTST_QST</QueryName>
      <isConnectedQuery>N</isConnectedQuery>
      <OwnerType>PUBLIC</OwnerType>
      <BlockSizeKB>0</BlockSizeKB>
      <MaxRow>9999</MaxRow>
      <OutResultType>WEBBROWSET</OutResultType>
      <OutResultFormat>NONFILE</OutResultFormat>
      <Prompts>
        <!--Zero or more repetitions:-->
        <PROMPT>
          <PSQueryName?></PSQueryName>
          <UniquePromptName>TOKEN</UniquePromptName>
          <FieldValue>237e3ad0-55b2-44ef-be27-6deeda652306</FieldValue>
        </PROMPT>
      </Prompts>
    </qas:QAS_EXEQRY_SYNC_REQ>
  </qas:QAS_EXEQRY_SYNC_REQ_MSG>
</soapenv:Body>
```

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- Here is an example of a SOAP request

REST URL REQUEST

https://dev-campus.concordia.ca/PSIGW/RESTListeningConnector/PSFT_CS/ExecuteQuery.v1/PUBLIC/CU_SR_CGPA_MOBILE/JSON/NONFILE?isconnectedquery=N&maxrows=9999&&prompt_uniquepromptname=BIND1&prompt_fieldvalue=12345678&json_resp=true

HTTP Basic Authentication

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- Here is an example of a REST URL request

RESTFUL RESPONSE

```
{
  "status": "success",
  "data": {
    "query": {
      "numrows": 1,
      "queryname": "CU_SR_CGPA_MOBILE",
      "rows": [
        {
          "attr:rownumber": 1,
          "G.OPRID": "P00000000",
          "A.EMPLID": "R",
          "A.ACAD_CAREER": "Graduate",
          "A.ADM_APPL_NBR": "0",
          "A.APPL_PROG_NBR": "0",
          "B.PROG_STATUS": "Active",
          "A.SCC_ROW_UPD_OPRID": "CU_SR_BATCH",
          "A.SCC_ROW_UPD_DTTM": "2016-03-29T23:59:12-0400",
          "E.DESCR": "Doctor of Philosophy",
          "F.DIPLOMA_DESCR": "Doctor of Philosophy\nBuilding Engineering",
          "C.PLAN_SEQUENCE": 10,
          "A.CU_CUSTOM_CGPA": 4.1,
          "A.CU_MANUAL_CGPA": 0,
          "A.STDNT_CAR_NBR": 0,
          "EXPR14_14": 4.1
        }
      ]
    }
  }
}
```

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- Here is an example of a RESTFUL response
- Initial versions of PeopleTools, JSON responses were buggy; eg errors when a value was null for example

2. QUERY ACCESS SERVICES - BRIEF WALKTHROUGH

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QUERY MANAGER

Query Name: CU_SR_OS_MOBILE_MY_WEEKLY_SCHD Description: Get student weekly schedule

Working on selection: Top Level of Query

Col	Record	Fieldname	Format	Ord	XLAT	App	Heading Text	Add Criteria	Edit	Delete
1	A	STRM - Term	Char4	1			Term	<input type="checkbox"/>	Edit	<input type="checkbox"/>
2	A	SUBJECT - Subject Area	Char8	5			Subject	<input type="checkbox"/>	Edit	<input type="checkbox"/>
3	trim	(A.CATALOG_NBR)	Char5	6			trim(A.CATALOG_NBR)	<input type="checkbox"/>	Edit	<input type="checkbox"/>
4	A	SSR_COMPONENT - Course Component	Char3		N		Component	<input type="checkbox"/>	Edit	<input type="checkbox"/>
5	F	XLATLONGNAME - Translate Long Name	Char30				Long Name	<input type="checkbox"/>	Edit	<input type="checkbox"/>
6	A	CLASS_SECTION - Class Section	Char4				Section	<input type="checkbox"/>	Edit	<input type="checkbox"/>
7	A	DAY_OF_WEEK - Day	Char9				Day	<input type="checkbox"/>	Edit	<input type="checkbox"/>
8	substr	(A.MEETING_TIME_START,1,2)	Char2	3			START_HOUR	<input type="checkbox"/>	Edit	<input type="checkbox"/>
9	substr	(A.MEETING_TIME_START,4,2)	Char2	4			START_MIN	<input type="checkbox"/>	Edit	<input type="checkbox"/>
10	substr	(A.MEETING_TIME_END,1,2)	Char2				END_HOUR	<input type="checkbox"/>	Edit	<input type="checkbox"/>

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- Query manager. Can be built by anyone who builds queries
- Standard stuff. Put in the prompts you need, these will be parameters that will be passed through.

PERMISSION LIST: QUERY SECURITY

The screenshot displays the Concordia Query Access Manager interface. At the top, the Concordia logo is visible. Below it, a navigation breadcrumb shows: Favorites > Main Menu > PeopleTools > Security > Query Security > Query Access Manager. The main heading is "Query Access Manager". Below this, there are fields for "Effective Date" (01/01/1901), "Status" (Active), and "Valid Tree". The "Tree Name" is CU_QAS_TREE, and the "Query Access Service" is listed below it. A toolbar includes "Save As", "Close", "Tree Definition", "Display Options", "Print Format", and "Export to PDF". The breadcrumb "CONCU > CU_QAS" is shown, along with "Collapse All", "Expand All", and "Find" options. The main content area shows a tree structure under "CONCU - CONCU - Access Group". The tree includes the following items: CU_QAS - Only Allow in QAS, CU_ML_GPA_VW - Mobile view of GPA, ENRL_REQ_DETAIL - Enrollment Request Detail Line, CU_GRAT - Grade Roster App Table, CLASS_TBL - Class Table, STDNT_ENRL - Student Enrollment Table, CU_ML_MAX_GR_DT - returns max grade_dt, HOLIDAY_DATE - Holiday Dates, and CU_CONV_EVENT - Conv Ceremony Level 1 Rec.

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- Concordia created a separate tree for queries within the query access tree
- Your tree includes the records needed to support your queries

PERMISSION LIST: QUERY SECURITY

Permission List Access Groups

Permission List CU_ITCPI_QAS

Description For the Query Access Service

*Tree Name	*Access Group	Accessible
CU_QAS_TREE	CU_QAS	<input checked="" type="checkbox"/>

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- Add your query tree to your permission list

PERMISSION LIST: INTEGRATION BROKER

Navigation: Favorites > Main Menu > People Tools > Security > Permissions & Roles > Permission Lists

Web Services: Web Libraries | Web Services | Personalizations | Query | Mass Change | Links | Audit

Permission List: CU_ITCPI_QAS
Description: For the Query Access Service

Buttons: Full Access (All) | No Access (All)

Web Services	Personalize	Find	First	1-2 of 2	Last
Service			Edit		
CU_AEM_MOBILE			Edit	+	-
QAS_QRY_SERVICE			Edit	+	-

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- Your permission list needs access to the service operations that drive QAS.
- In this case we grant to the delivered QAS_QRY_SERVICE.
- CU_AEM_MOBILE is a custom service operation. It's not a QAS service.

PERMISSION: INTEGRATION BROKER



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Here is a look at the service operation

SECURITY FOR SERVICE OPERATION

The screenshot shows the configuration page for a service operation in the PeopleTools Integration Broker. The breadcrumb trail is: Favorites > Main Menu > PeopleTools > Integration Broker > Integration Setup > Services. The 'General' tab is selected. The configuration details are as follows:

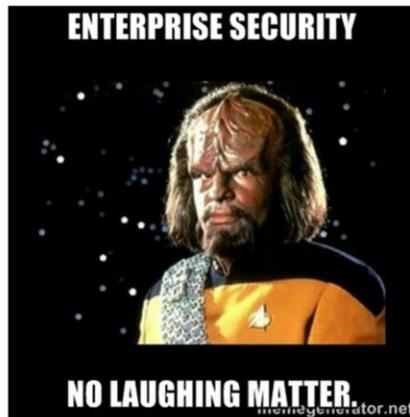
Service Operation	QAS_EXECUTEQRYSYNC_OPER
Operation Type	Synchronous
*Operation Description	<input type="text" value="Execute Query Sync"/>
Operation Comments	<input type="text"/>

There is a checkbox labeled "User/Password Required" which is checked and highlighted in yellow.

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- We require User/Password for this operation. Not set by default.

CREATE USER



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- So we create a special local userid and grant the permission list
- We will see how this user works in the next profile

3 USE CASES FOR QAS

SHORT DESCRIPTION

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CONCORDIA'S MOBILE APP



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- Concordia mobile app was the driving force to start using query access services. We make extensive use of it to power our app.
- Live in fall 2017. Let students try it on site at beginning before full public deployment.
- Took 3 months to build. We spent more time trying to get Oracle's delivered app to work than it took to build this from scratch.
- Collaboration between Campus Solutions developers, business analysts, and University Communications.
- App has been well received.

APACHE CORDOVA, ADOBE PLATFORM

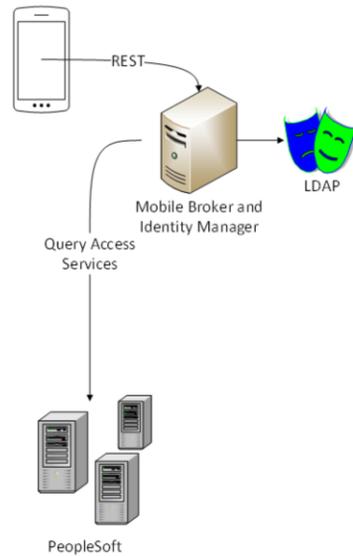


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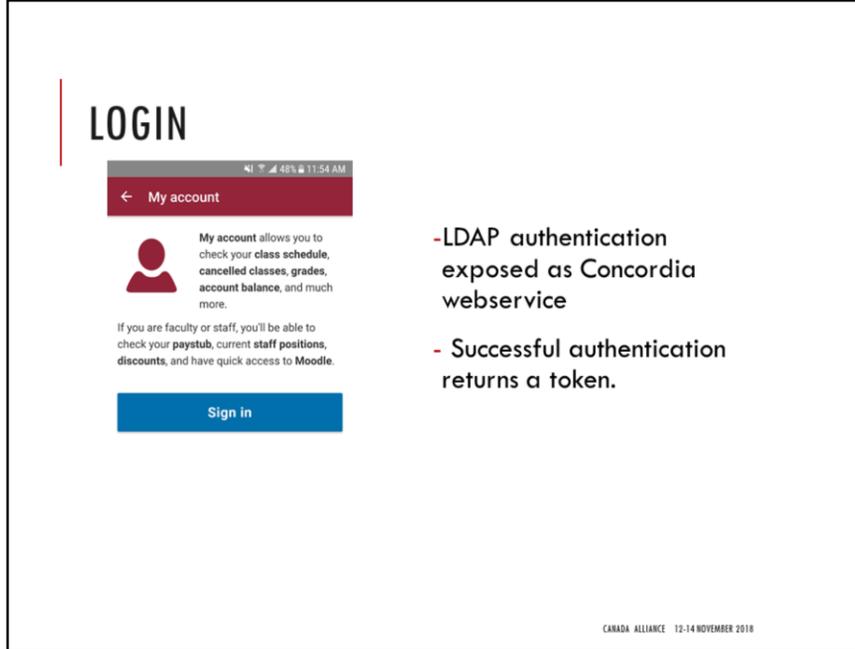
- Concordia app is based on the Apache Cordova platform.
- We use the Adobe AEM Mobile cloud platform to host our HTML assets and it provides some basic infrastructure services for us. However for purposes of the SIS portion of the app is done in house.
- Developers need to know HTML5, CSS, javascript. This is a commodity skillset and it's one of the selling points for business application apps. Don't let developers try and push native development on you.

DESIGN

- Login with LDAP
- Mobile broker is lightweight .NET proxy between app and PeopleSoft that manages security and state
- The broker has a role account which queries SIS data via QAS



Content synced from Adobe AEM Cloud but fundamentally your HTML, javascript calls reside on the phone. Your phone is hosting the HTML files and its your phone making the calls to external webservices.



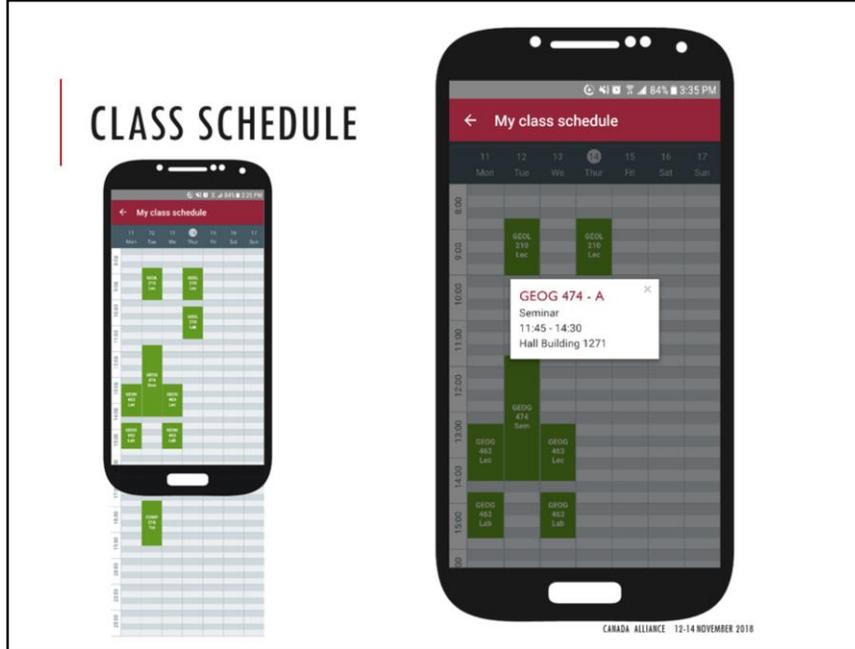
- We aren't using PeopleSoft authentication. Users authenticate against LDAP through our mobile broker and receive a token in return
- The token is accessible via Adobe javascript calls, though you could store it on your phones local storage or cookie.
- The token must be used for all webservice calls to our mobile broker; the broker converts the token to an emplid and calls the relevant webservices

FEATURES (REQUIRING AUTHENTICATION)



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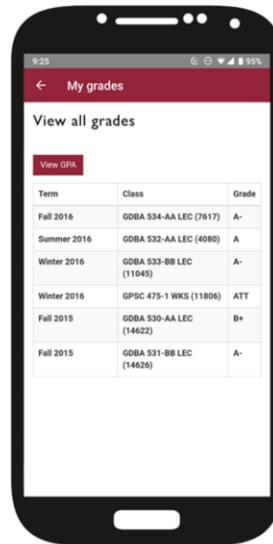
All these services, except the Moodle link and schedule builder, use query access services to generate the page in the app



- Query joins student's enrollment with class meeting pattern
- Expects a date as a parameter and returns Monday to Sunday
- If the student wants to see next week or previous week, a subsequent call to the QAS webservice is triggered
- Clicking on details for a course is just a modal window with data that was already pulled from the initial call
- Need to balance how much data to pull and when; weigh system load versus app responsiveness. Implementing local caching for January. This will also have the benefit of being available offline.

GRADES

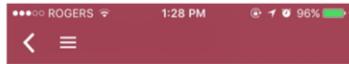
- Current grades
- All grades
- GPA



ACCOUNT BALANCE

Students get there account balance.

We don't have mobile payments yet.

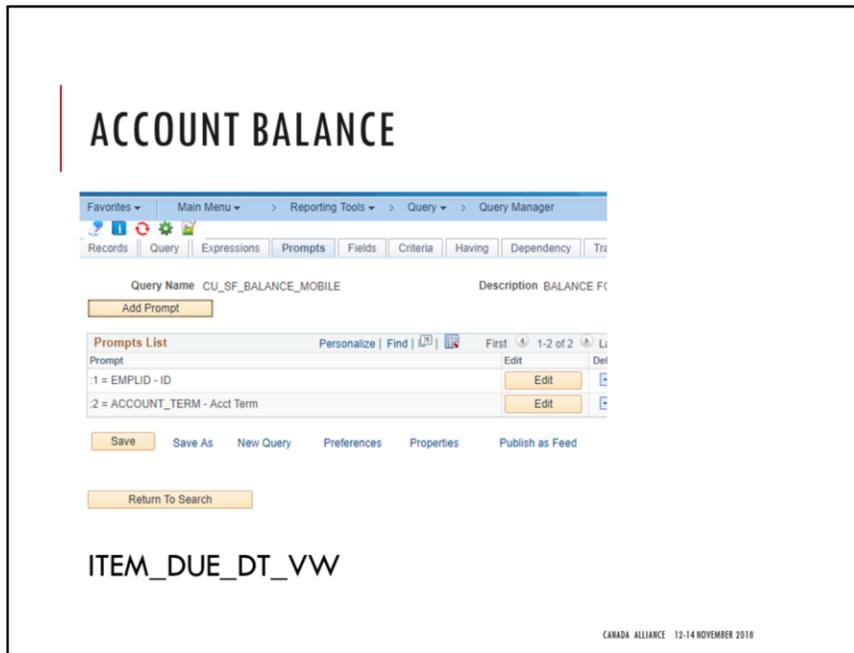


Term	Description	Balance
Fall 2018	Health	\$59.00
Fall 2018	Tuition	\$490.01
Fall 2018	Compulsory	\$289.97
Fall 2018	Interest & Late Fees	\$82.90
Fall/Winter 2018-19	Tuition	\$245.55
Fall/Winter 2018-19	Compulsory	\$132.21
	Total	\$1299.64

All fall fees become due **September 1st**. The final payment deadline is **September 30th**, after which, late payment and interest fees will be applied.

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- Students can get there account balance but they can't make payments yet. It's on the roadmap.



Uses the delivered view ITEM_DUE_DT_VW. This psquery was developed by our functional team.

There is a flaw relying on query for this. Anyone know what it is?

TUITION CALC

```
COMMON UTILITIES HANDLERS W500.tutCalcHandler.OnExecute (Application Package PeopleCode)
tutCalcHandler [application_class] | OnExecute

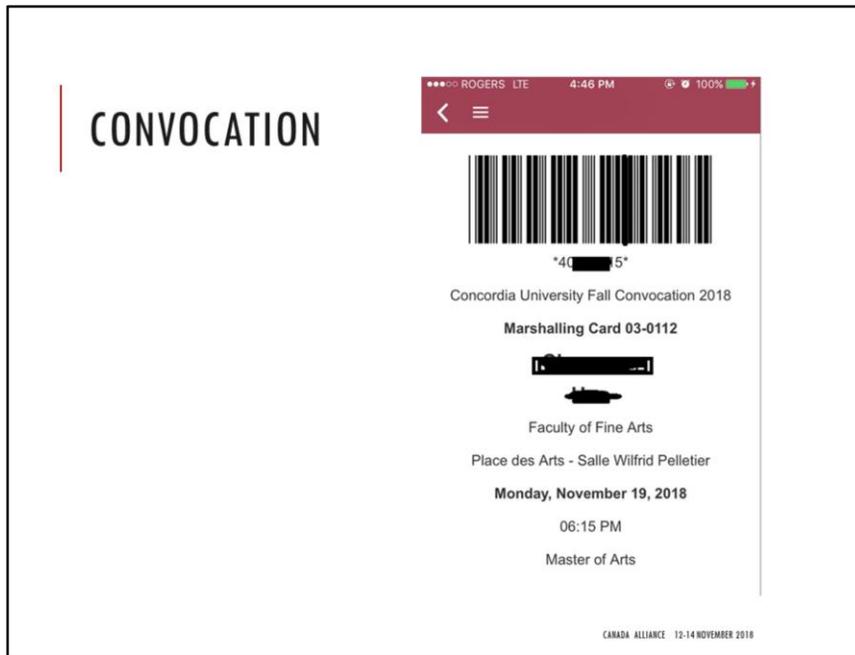
End-If;
End-For;
End-For;

If (this.OnValidate("TU_STUD_TUT_CALC", stubent) Then

    aopid = api.getItemElementValue(sandbox, "opid", sandbox.Sandbox(0), false);
    SQLExec("select opid from popopeds where opid = ?", aopid, smpid);
    If All(smpid) Then
        SQLExec("select max(term) from ps_term_tbl where term_begin_dt = trunc(sysdate) and term_end_dt = trunc(sysdate) and acad_career = 'DORD'");
        aterm_option = "A";
        areturn_code = "1";
        aerror_msg = " ";
        amessage_set_msg = 0;
        amessage_msg = 0;
        Comment();
        RemoteCall("FSCOBOL", "FSCOBOLPROG", "FFPRCALC", "BUSINESS-UNIT", "CORCU", "ENVELO", smpid, smpid, smpid, "BUS-OPION", aterm_option, areturn_code);
    If areturn_code < 0 Then
        setResult = Message(4810, 49, "Remote Function Call Error");
    Else
        If aerror_msg = "E" Then
            setResult = Message(4810, 49, "Return error Message.");
        Else
            setResult = Message(4810, 49, "Return error Message.");
        End-If;
        setResult = "Success";
    End-If;
    ..
End-If;
```

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It won't be always up to date. We created a separate, custom webservice to trigger tuition calc for a student. So the mobile app calls the a COBOL process.



We offer our convocation marshalling card at graduation ceremonies, but we find students still rely on their paper ticket. This is our least popular service.

FIRST DAY OF SEPTEMBER

Queried from PSQASRUN

Queries	Hits
CU_SR_QS_MOBILE_MY _WEEKLY_SCHD	58650
CU_SR_QS_MOBILE_MY _GRADES	345
CU_SR_QS_MOBILE_MY _CURR_GRADES	13504
CU_SR_QS_MOBILE_MY _CLS_CANCEL	15465
CU_SR_QS_MOBILE_MA X_GR_DT	16
CU_SR_QS_MOBILE_MA RSH_CARD	6101

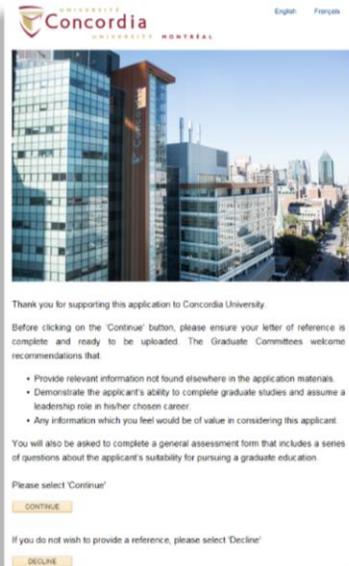
CANADA ALLIANCE 12-14 NOVEMBER 2018

ONLINE REFERENCE

- Admissions process to allow external users to answer survey and upload letters of recommendation for applications

- Can't look like PeopleSoft.
Needs to be user friendly, easy to use.

- Survey questions are configurable and also depend on program the applicant is applying to



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- Applicant applies to grad school, they need people to submit letters of references, recommendation letters and answer questions as part of the application
- Concordia was behind the times and did not have an online version
- Requirements: Can't look like PeopleSoft, needs to be user friendly, and easy to use
- The questions of course can't be standardized, will need to depend on the program the applicant is applying to



Letter of Reference

Thank you for supporting this application to Concordia University!

You have agreed to provide a reference for Dr. Who to the Master of Engineering in Software Engineering.

Instructions

1. All questions listed below must be answered and no field can be left blank.
2. Information on this form will be used to determine if the applicant is a suitable candidate for the graduate program listed above.
3. Upon completion of the questionnaire, please upload your letter of reference.
4. Click on the 'Submit' button at the bottom of the screen.

Please note that once submitted, you will not be able to modify your answers or upload any other documents.

Please Enter Your Contact Information Below

*Your Name:	*Title or Occupation
<input type="text"/>	<input type="text"/>
*Institution or Company	*Department
<input type="text"/>	<input type="text"/>
*Address:	

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- Initial version was a public PeopleSoft page with everything embedded into HTML areas object including bootstrap objects
- Moving towards pure HTML5 page



Le texte français suivra

Dear [REDACTED]

You have been asked to provide a reference for [REDACTED] in support of an application to the Doctor of Philosophy in Biology at Concordia University. Before proceeding, please be aware of the following:

- The link below is active for **14 days**.
- The assessment form has **two parts**:
 - A **questionnaire** asking you to rank the applicant's qualities and potential to succeed in the program.
 - An **attached letter** describing the applicant's ability to complete graduate studies. The letter should be prepared before clicking on the link.
 - The assessment form cannot be saved, and must be completed within 30 minutes of opening the form.
- You will receive a confirmation email within two hours after submitting the assessment form. Please contact application.support@concordia.ca if you do not receive this email and include the following application number: [REDACTED]
- Applicants are not able to access the contents of your assessment during the application process; they will only see the date it was submitted. However, applicants can submit a request to obtain letters of reference once a decision has been made on their file.*



We appreciate your time and effort in support of this application to Concordia's graduate programs. Please use the link below to provide a reference for this applicant, or follow the instructions to decline if you are unable to provide a reference.

Please [CLICK HERE to begin your reference](#)

If you are unable to access the link above, please copy and paste the link below into the browser.

[https://campus.concordia.ca/pscsprd/cu_html/online_referencer.html?token=\[REDACTED\]371-4183-8c4a-b99288d7ce0d&lang=E](https://campus.concordia.ca/pscsprd/cu_html/online_referencer.html?token=[REDACTED]371-4183-8c4a-b99288d7ce0d&lang=E)

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Student applies through our AAWS admission application.

Batch process runs after admission application is submitted.

System sends an email that embeds a GUID (guaranteed unique identifier) tied to the referee/application number.

[SHOW THE GUID ON THE SCREEN]

Please answer the following questions regarding the applicant

* Question 1: How long have you known the applicant?

* Question 2: What is your relationship to the applicant?

* Question 3: Please indicate the representative group with which the applicant is compared:
If you answered *Other*, please specify in the text box below.

Undergraduate
 Master's
 Doctoral

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- The token is joined to other tables to pull the questions and information about referee and applicant
- Questions and answer format pulled from config table and constructed on the fly with javascript

ONLINE REFERENCE — SUBMIT BUTTON

Questions and answers are gathered into json object

Referee's answers are collated into a simple XML file via javascript and submitted

We also push the uploaded document to PeopleSoft via webservices

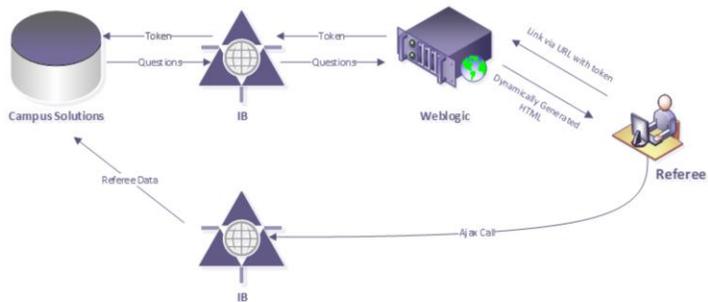
- Batch job converts answers to HTML file and adds to our integrated DMS which can convert to PDF

```
file_ext = document.getElementById("fileToUpload").value.split('.').pop();
var reader = new FileReader();
Add_readBinaryString_IE();
reader.readAsBinaryString(file);
reader.onload = function(e) {
    fileContent = e ? e.target.result : reader.content;
    file_Content = btoa(fileContent);
    xmlString = xmlString + "<?xml version='1.0'?>";
    xmlString = xmlString + "<ADD_FILE_REQ xmlns='http://xmlns.xml.org'";
    xmlString = xmlString + "<fileName> " + file_name + "</fileName>";
    xmlString = xmlString + "<fileType> " + file_ext + "</fileTy";
    xmlString = xmlString + "<token> " + token + "</token>";
    xmlString = xmlString + "<fileContent> " + file_Content + "<";
    xmlString = xmlString + "</ADD_FILE_REQ>";
    console.log(xmlString);
$.ajax({
    headers: {
        Accept: "text/xml; applios
        Content-Ty
```

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ONLINE REFERENCE

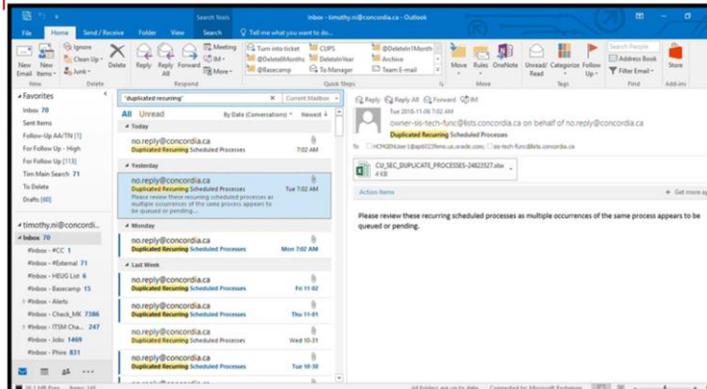
Alliance 2018 - To Whom It May Concern:
Online Submission for External References



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Concordia's Business Analyst presented on the entire process at Alliance 2018 if your interested.

DEVOPS/MONITORING



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- [VIDEO]
- We use scheduled queries and some app engines to alert us about system issues that need action
- In this case we have been having a weird intermittent problem where scheduled jobs are mysteriously duplicated, causing some jobs to run concurrently
- This query provides a list of duplicated jobs, but most of the time its empty,
- we start getting in the habit of ignoring the email

CHECK_MK 1.2.8P9

- Open Source Monitoring Tool in use at Concordia
- Crawls some Campus Solutions and Interactive Hub pages.
- Also use it to monitor application server queueing
- Will transition some email based alerts to check_mk
- Will allow us to do more reporting
- Will be notified when there is a problem

GRAYLOG + SIEM

- Graylog Open Source log aggregation system based on Elastic
- We also use the
- Currently logs our WAF
- Completed proof of concept last month to load applications server logs
- We also exposed psaccesslogs via QAS
- We are thinking about other use cases and queries that might interest our security appliance; staff access at 3am for example.

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4. FUTURE AND FINAL THOUGHTS

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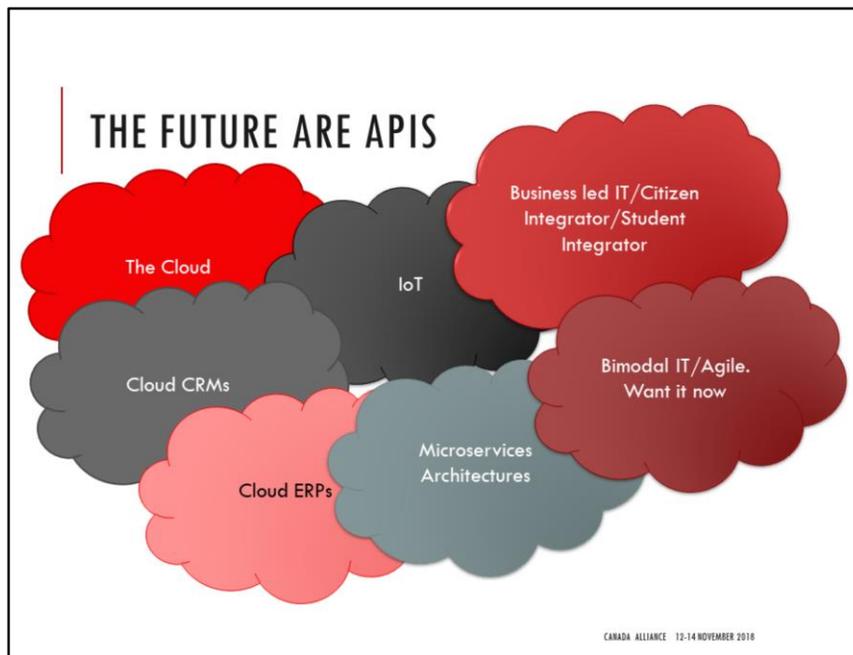
THE FUTURE

Integration work cannot be performed by only a few specialist groups in a central team. It must become a pervasively distributed capability across the organization.

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This is a great quote from a Gartner document called Integration Strategies for the Digital Era
Require New Delivery Models.

- In the old days, you might have had one big ERP system talk to another ERP system. Probably a flat file was involved. Those days are over.



- Many schools are on or moving to cloud CRMs like Salesforce or Microsoft Dynamics. API integrations.
- Workday for HR/Finance is moving towards becoming an industry standard. API integrations.
- IoT. API integrations.
- Microservice Architectures. This architecture is the opposite of centralized ERP architecture. Designing applications as loose, independent services. Hosted on cloud services like Azure Functions or Amazon Lambda, they aren't even tied to servers. It's code and applications that live on the cloud. API integrations.
- Some universities are starting to allow students to expose their own data through APIs. Citizen Integrators are business users who can start doing integrations.

CONCLUDING THOUGHTS



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- Oracle is pivoting to the cloud.
- Updates to Campus Solutions are slowing down. If you take away PeopleTools improvements, there seem to be even less investment in Campus Solutions.
- So does it make sense to build on the Campus Solutions platform anymore? Build/buy elsewhere and integrate should always be considered.

PRESENTERS

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**ALL ALLIANCE PRESENTATIONS WILL BE AVAILABLE FOR
DOWNLOAD FROM THE CONFERENCE SITE**

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THANK YOU!



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