#SHAREorg

SHARE
Technology · Connections · Results

IMS…**REST** it, **Share** it, **Mash** it, Just **Use** It

Dusty Rivers
Principal Technical Architect
GT Software

GTSoftware®
Modernize. Migrate. Succeed.

MAINFRAME BRILLIANCE 30 years GTSoftware®

Session #11232
August 7th, 2012

SHARE in Anaheim 2012

GOT IMS?

GOT IMS?

NEED TO MODERNIZE!

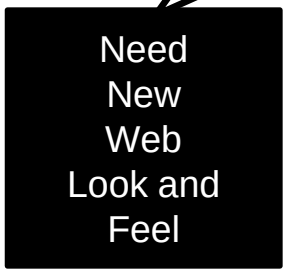
GOT IMS?

NEED TO MODERNIZE!

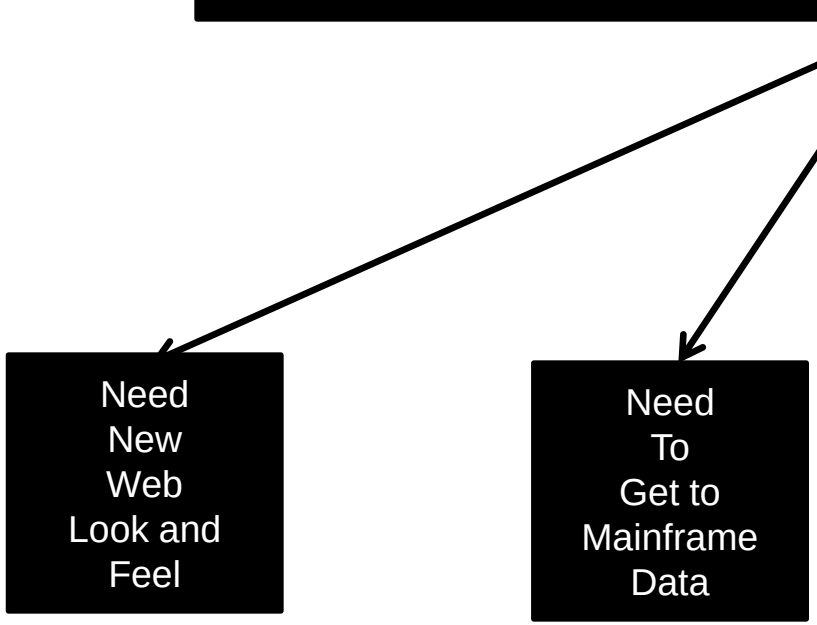
- Modernizing
- Doing Nothing
- Moving off the Mainframe

GOT IMS?

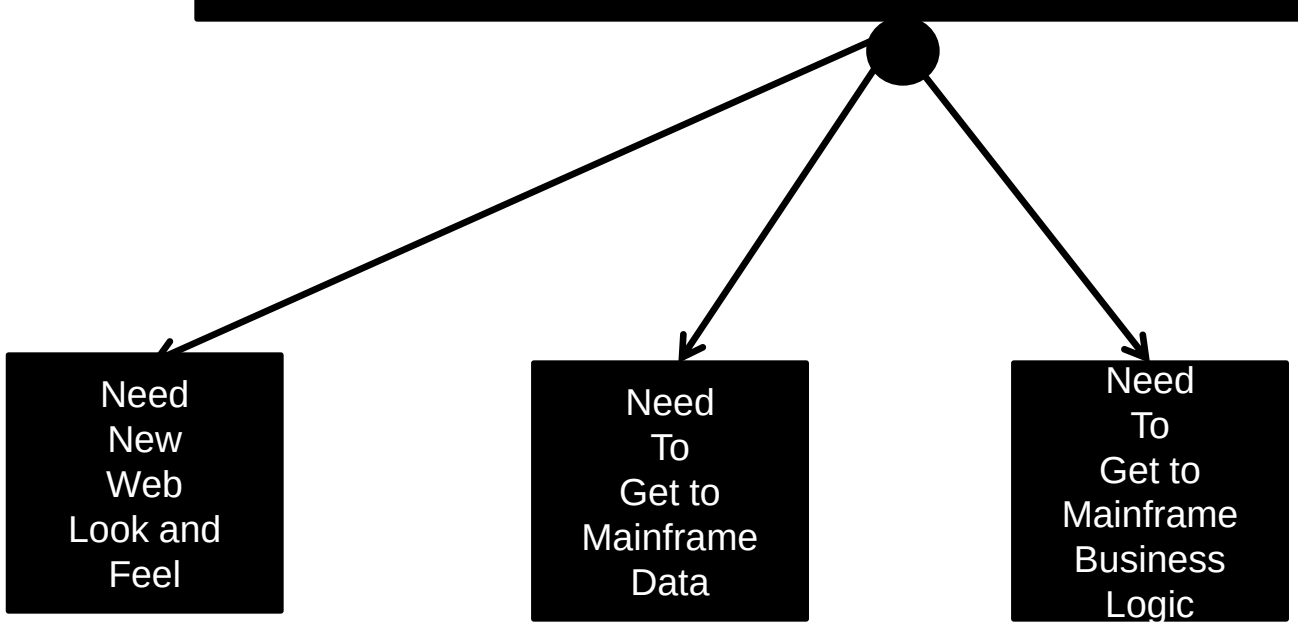
GOT IMS?



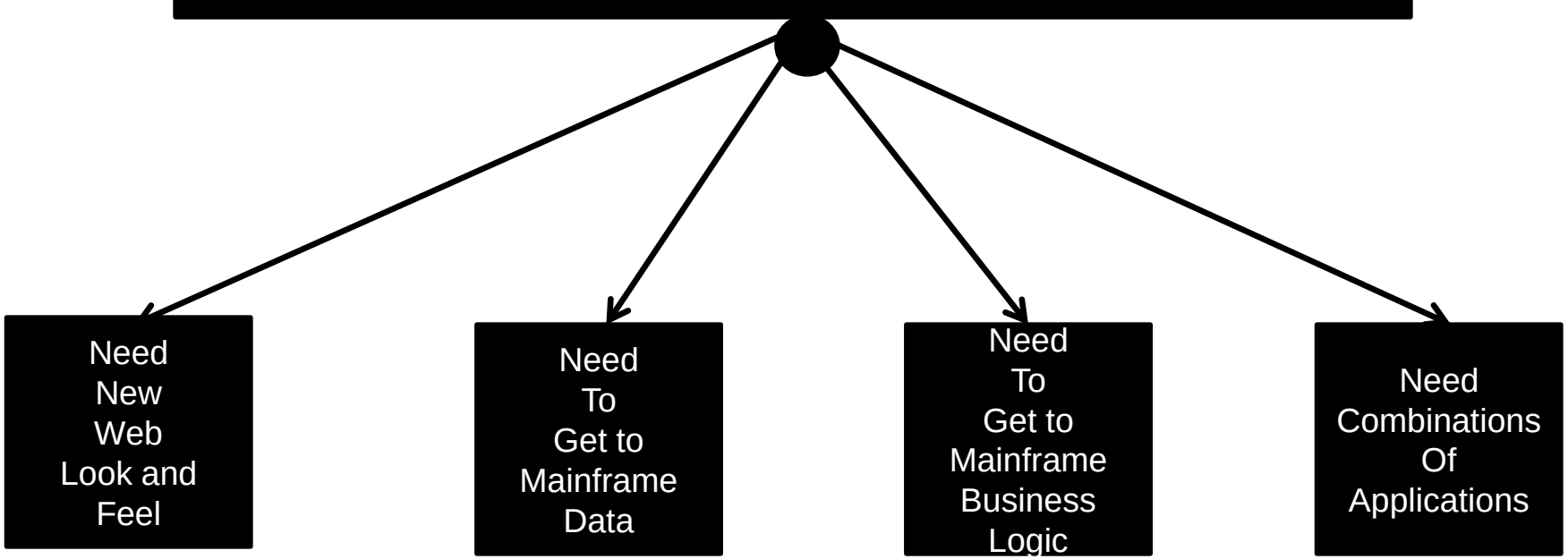
GOT IMS?



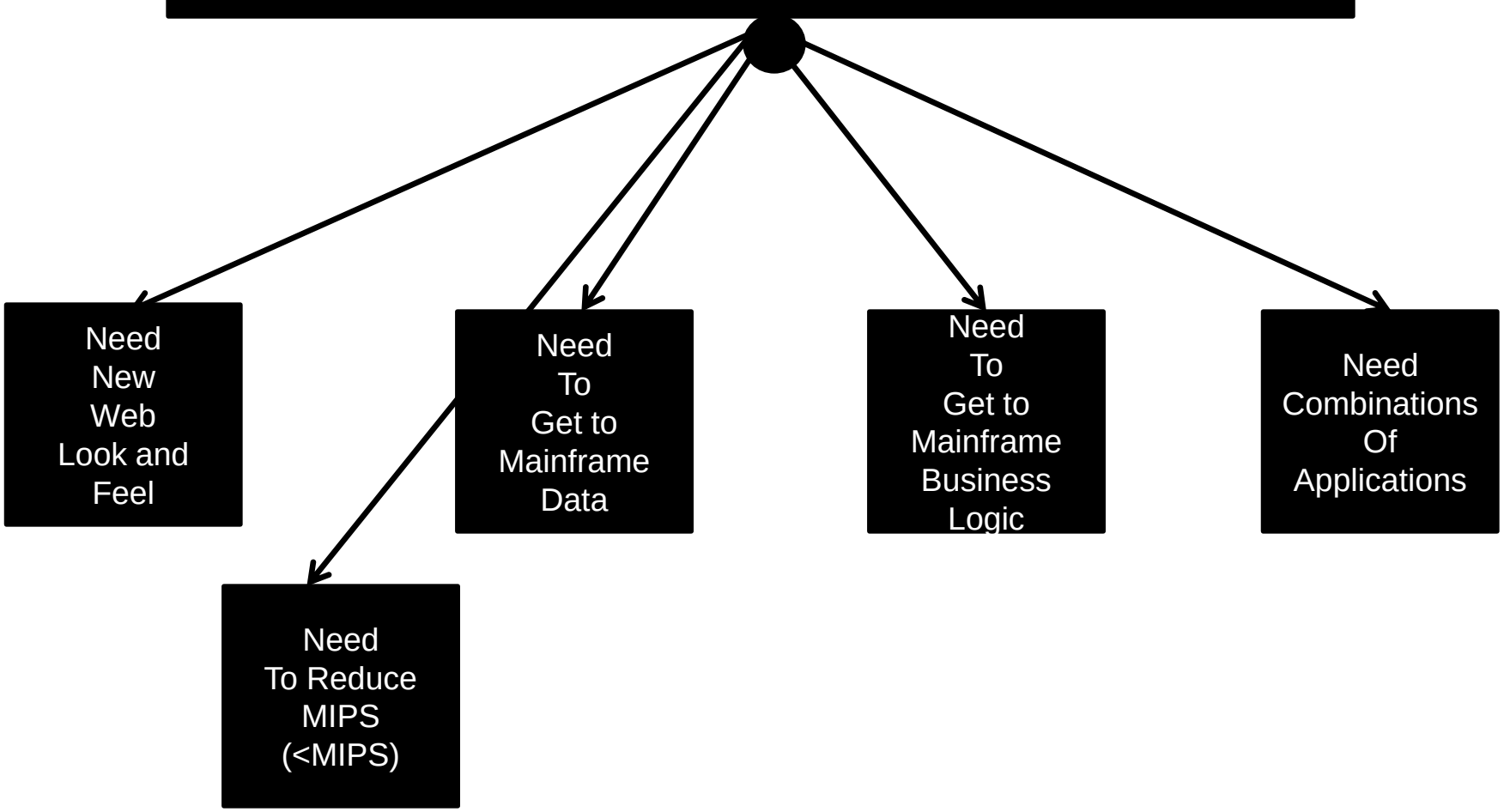
GOT IMS?


Need
New
Web
Look and
Feel
Need
To
Get to
Mainframe
Data
Need
To
Get to
Mainframe
Business
Logic

GOT IMS?


Need New Web Look and Feel
Need To Get to Mainframe Data
Need To Get to Mainframe Business Logic
Need Combinations Of Applications

GOT IMS?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Need To Reduce MIPS (<MIPS)
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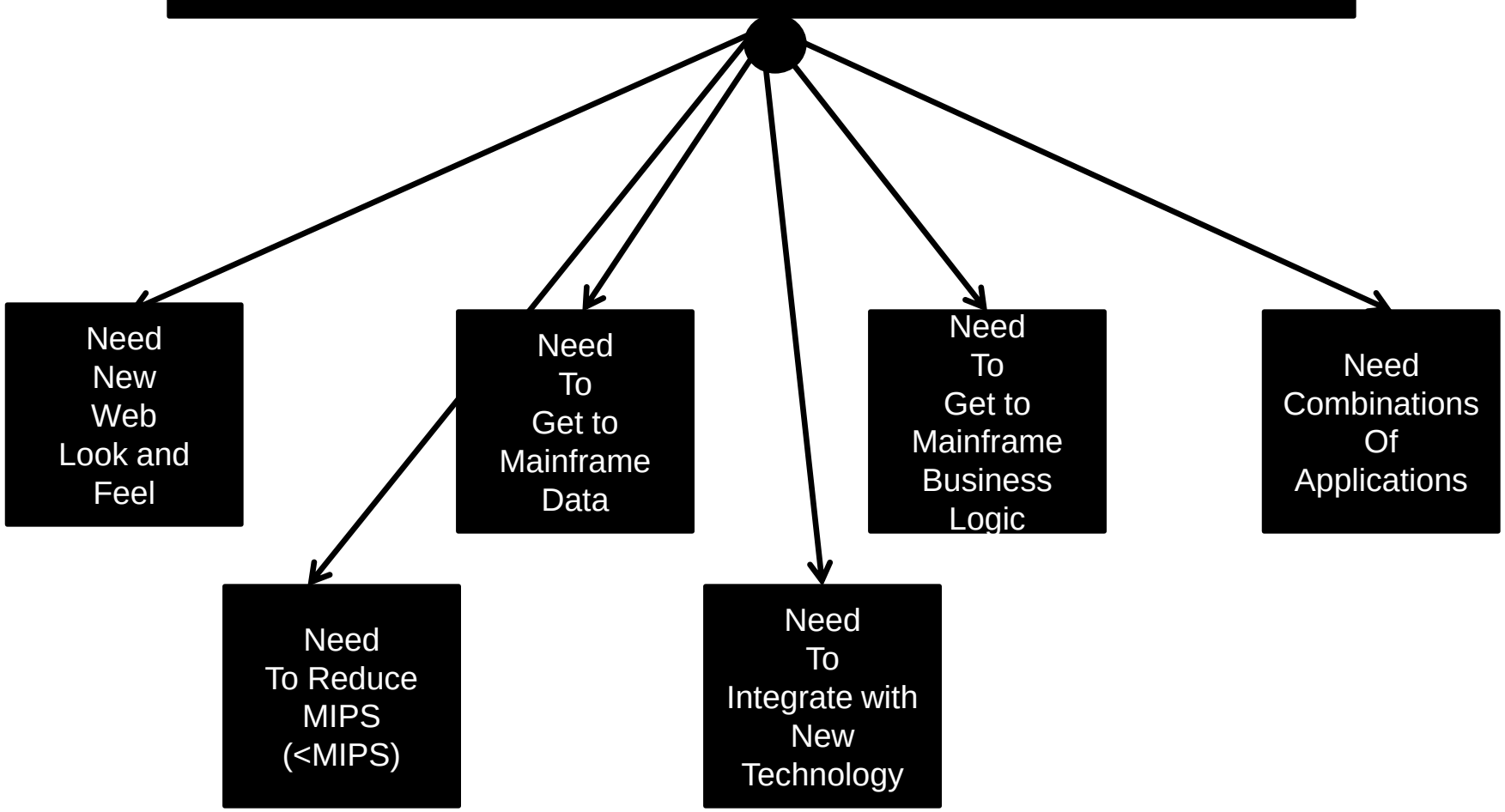
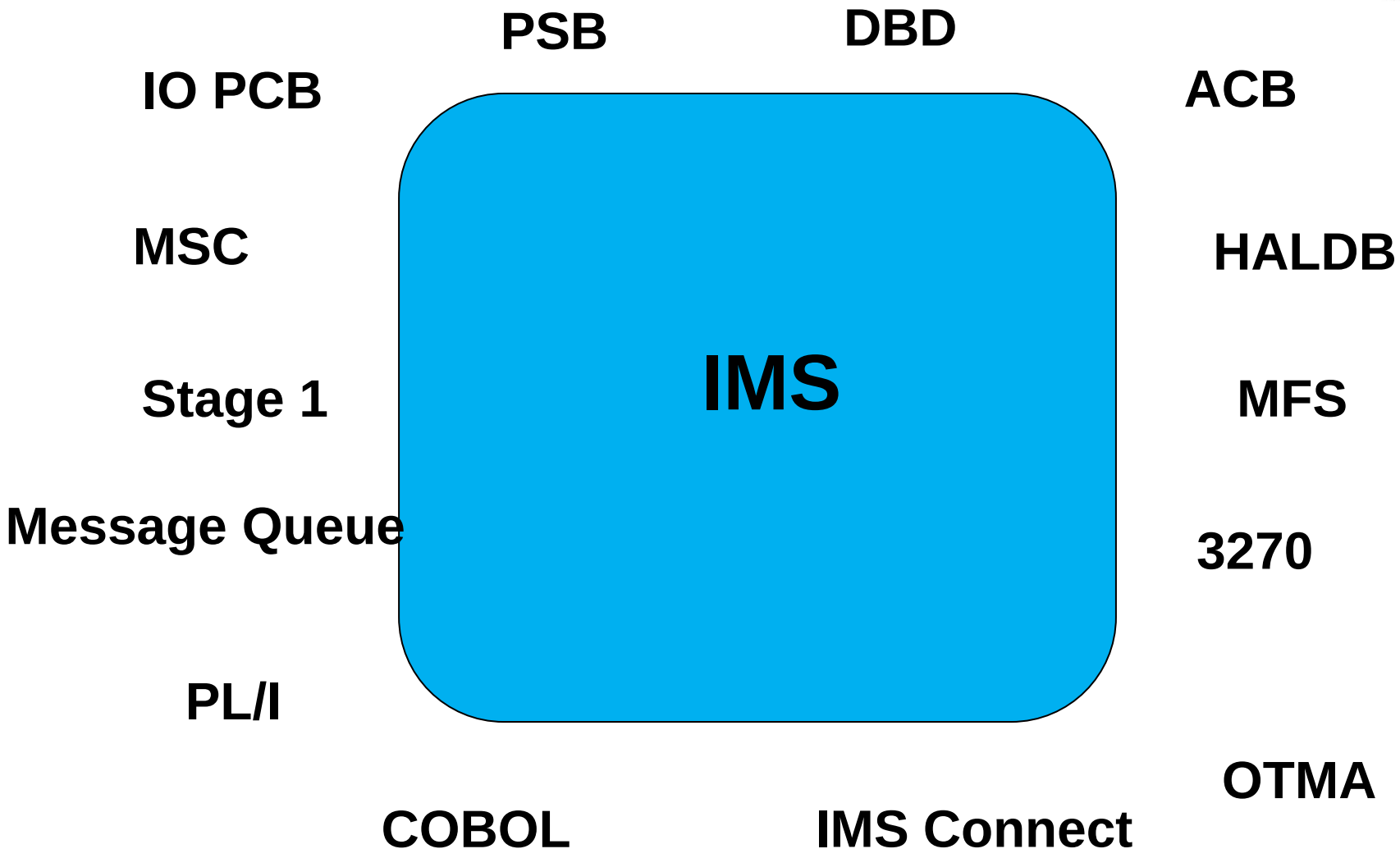
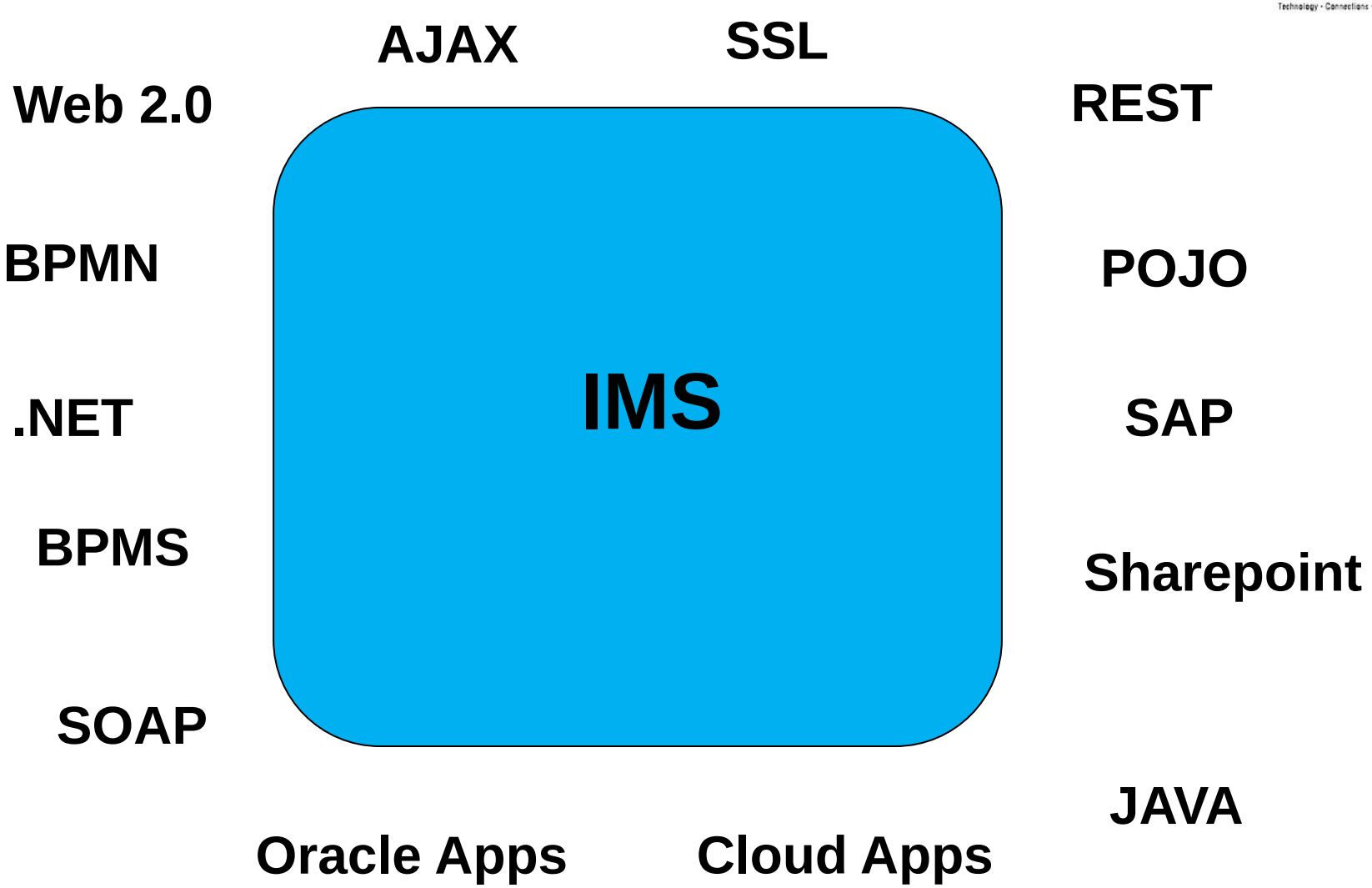
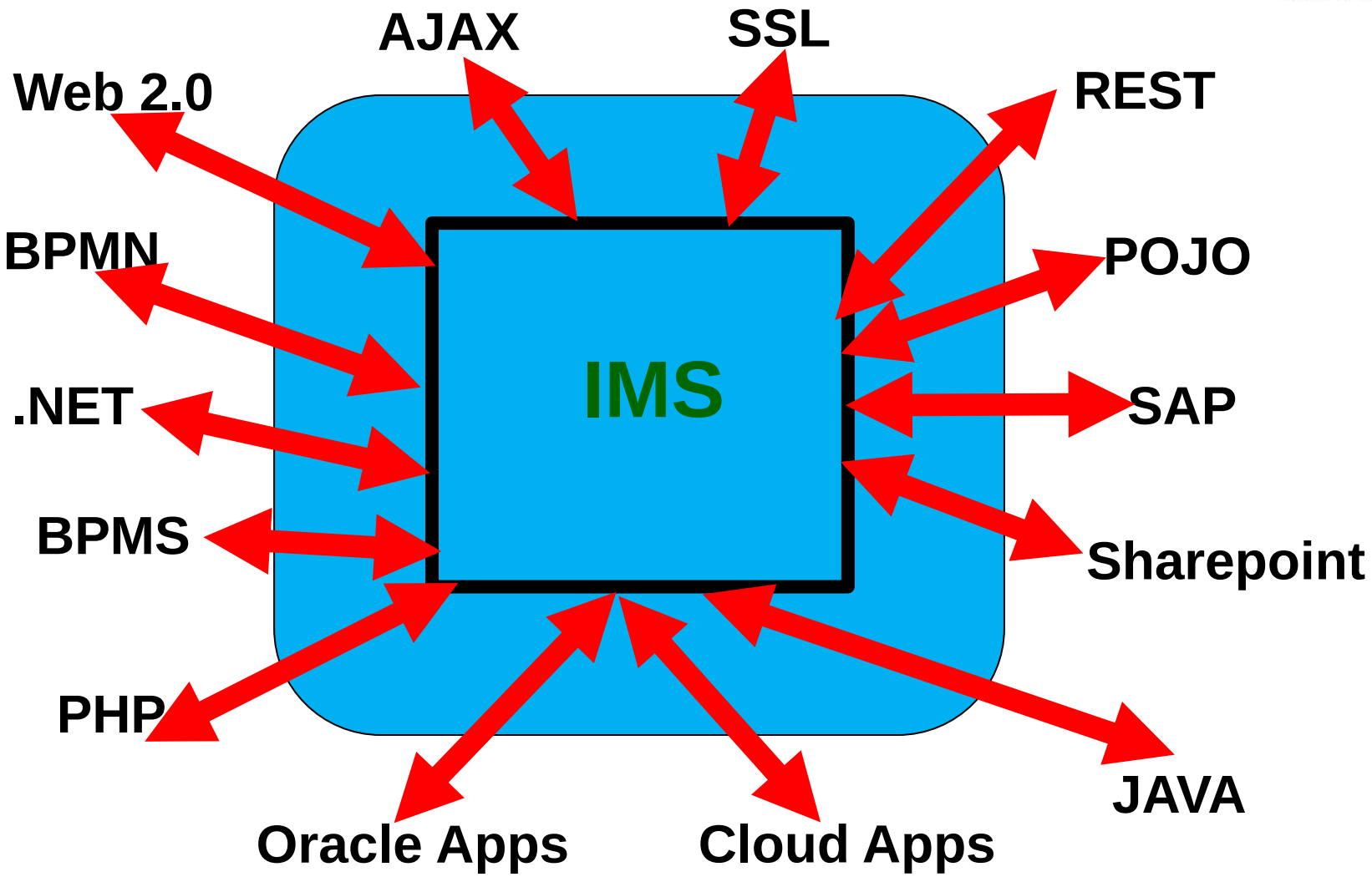
GOT IMS?


Need New Web Look and Feel
Need To Get to Mainframe Data
Need To Reduce MIPS (<MIPS)
Need To Integrate with New Technology
Need To Get to Mainframe Business Logic
Need Combinations Of Applications


PSB
DBD
IO PCB
ACB
MSC
HALDB
IMS
Stage 1
MFS
Message Queue
3270
PL/I
OTMA
COBOL
IMS Connect


AJAX
SSL
Web 2.0
REST
BPMN
POJO
IMS
.NET
SAP
BPMS
Sharepoint
SOAP
JAVA
Oracle Apps
Cloud Apps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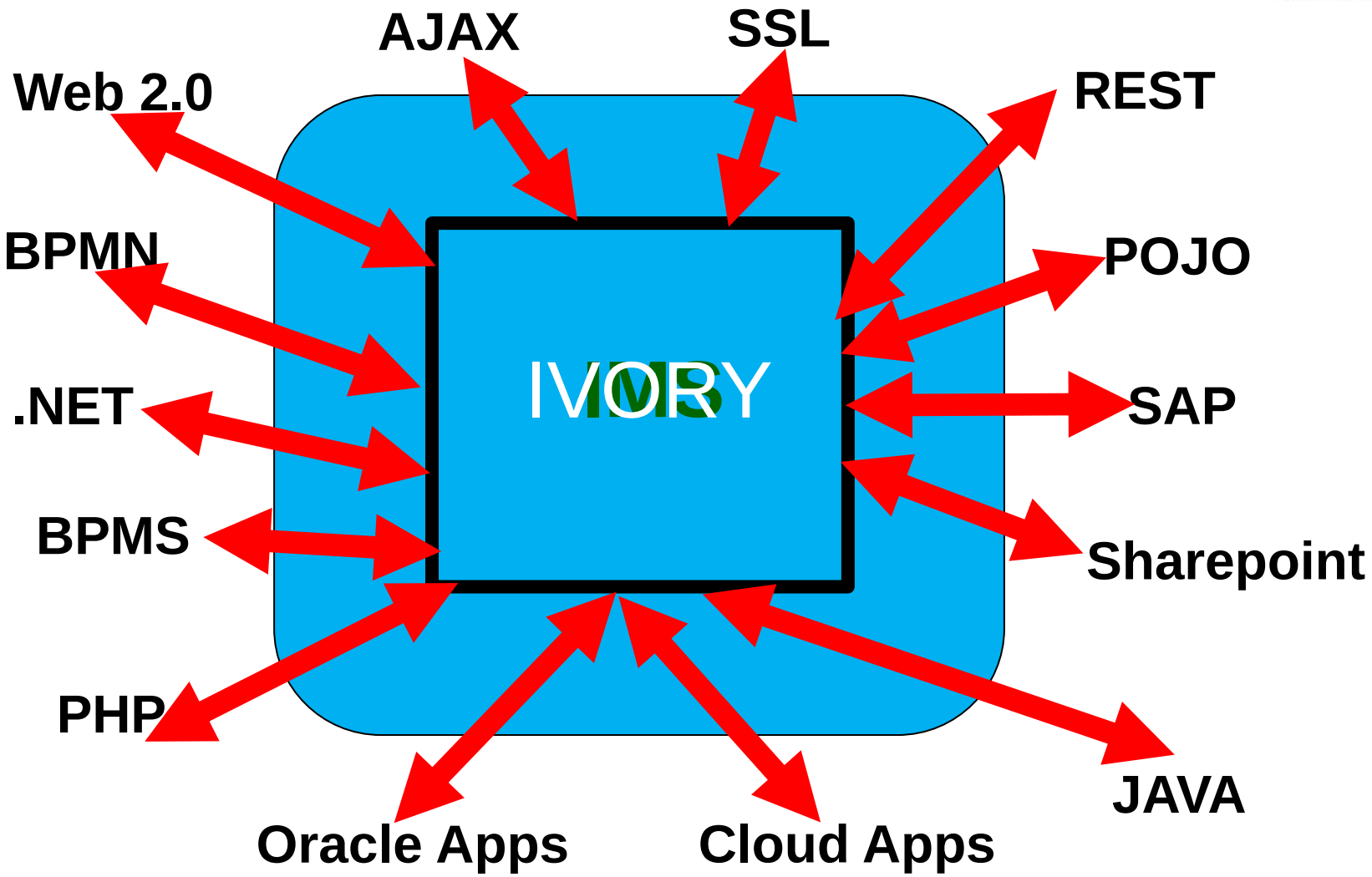
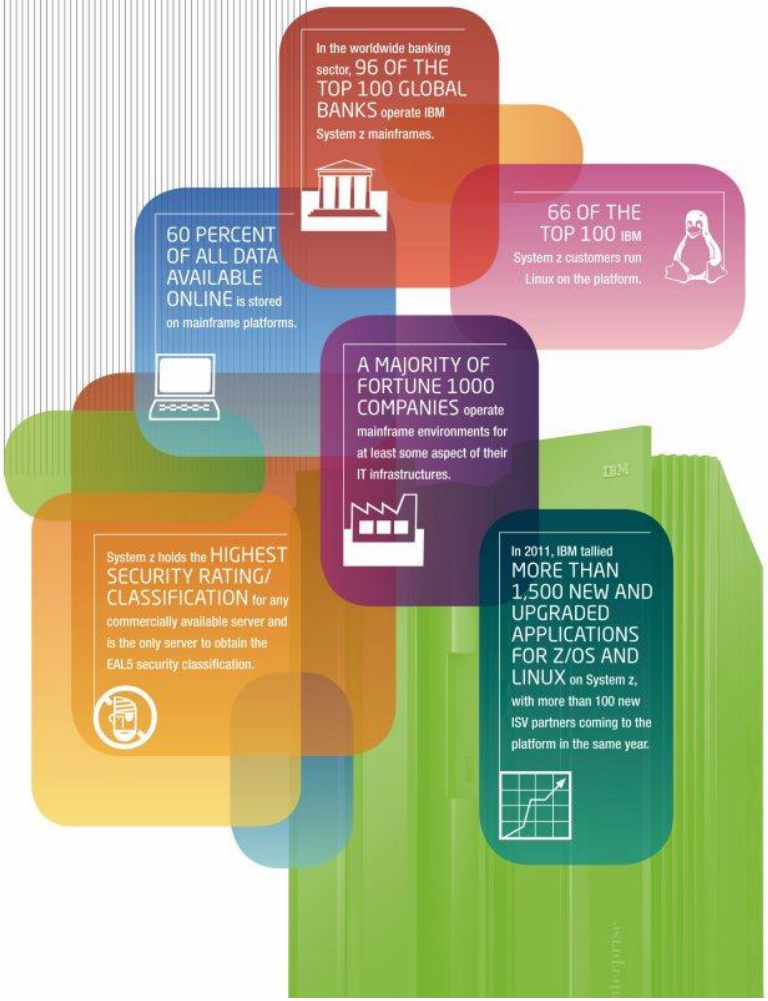

AJAX
SSL
Web 2.0
REST
BPMN
POJO
IVORY
.NET
SAP
BPMS
Sharepoint
PHP
JAVA
Oracle Apps
Cloud Apps

WHY MAINFRAME?



Success Factors:

1. **IMS** Data Used in Cloud and Mobile Applications

Success Factors:

- Critical IMS data available directly from cloud or mobile applications
- Available via ODBC/JDBC
- Available via Web Services(SOAP/REST)
- Available via JSON
- Available via JCA

Success Factors:

1. **IMS** Data Used in Cloud and Mobile Applications
2. **IMS** Applications to/from the cloud

Success Factors:

- IMS Applications can be called by Mobile or Cloud
- IMS Applications calling Mobile or Cloud applications
- IMS Applications calling in native language(COBOL,PL/1)
- IMS Application does not worry about XML/SOAP
- IMS Application can be orchestrated

Success Factors:

1. **IMS** Data Used in Cloud and Mobile Applications
2. **IMS** Applications to/from the cloud
3. **IMS** New Application usage with no new coding

Success Factors:

- IMS Applications can be included in new applications
- IMS Applications are left unchanged , but are reused
- IMS Applications can be combined in new business function
- IMS Applications are not re-coded
- No New IMS Application code is required

Success Factors:

1. **IMS** Data Used in Cloud and Mobile Applications
2. **IMS** Applications to/from the cloud
3. **IMS** New Application usage with no new coding
4. **IMS** New Applications leveraging standards

Success Factors:

- New Services can leverage industry standards(IFX,SWIFT,ACORD..etc.)
- IMS Applications can use company specified standards and mappings(XSD's, WSDL)
- Services can easily be mapped in Ivory Studio that will handle difficult data types.

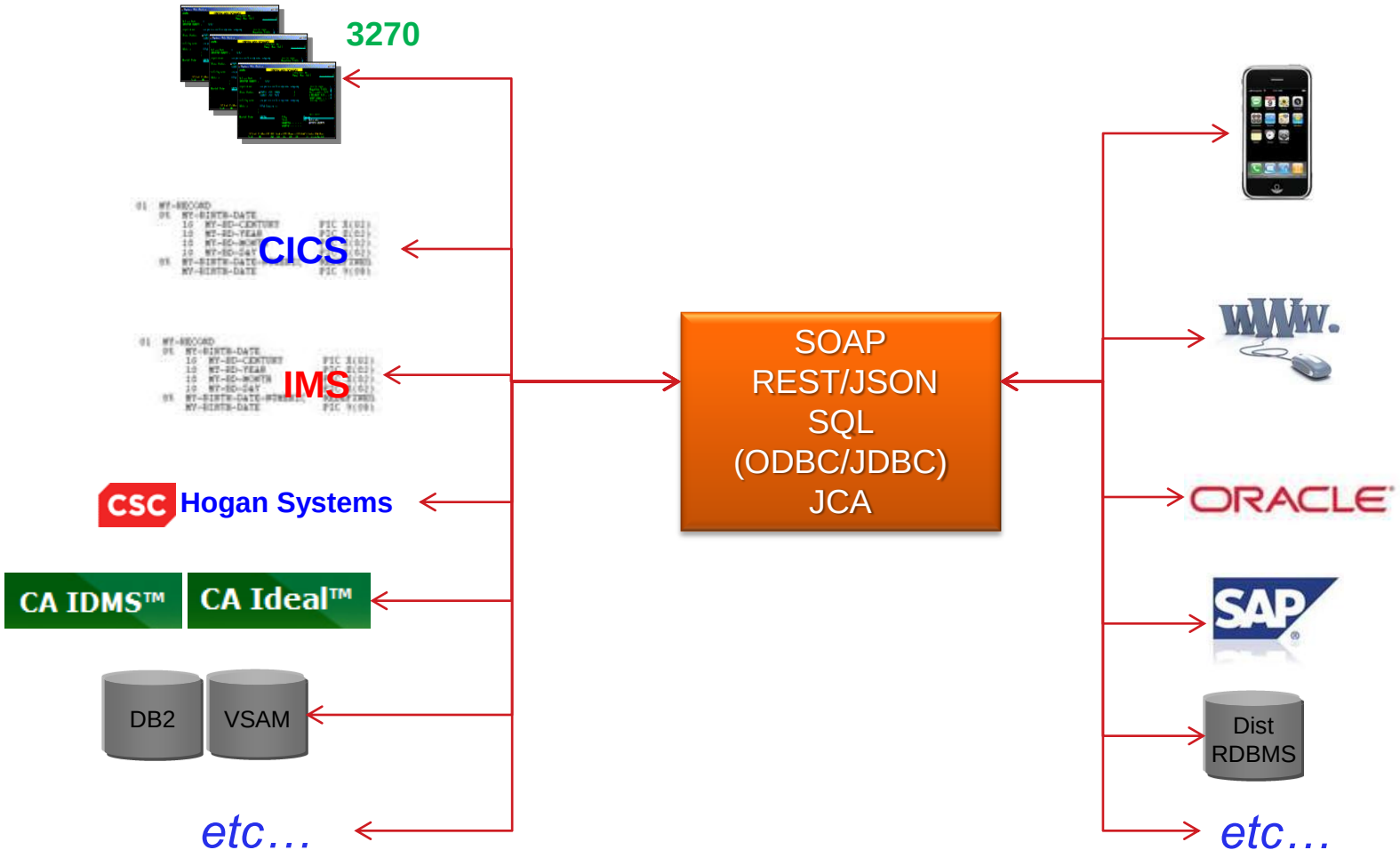
Success Factors:

1. **IMS** Data Used in Cloud and Mobile Applications
2. **IMS** Applications to/from the cloud
3. **IMS** New Application usage with no new coding
4. **IMS** New Applications leveraging standards
5. **IMS** New Applications developed at the speed of business

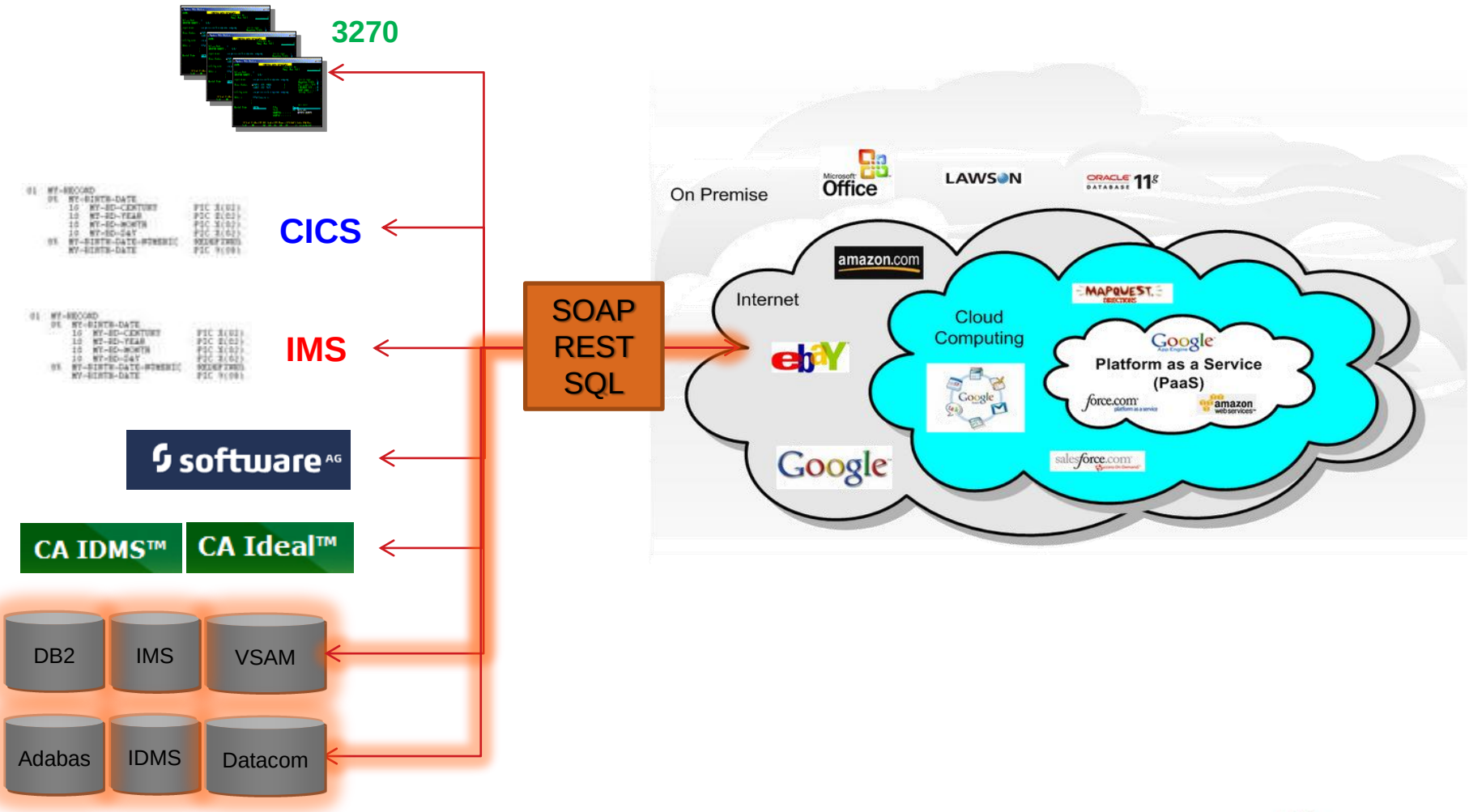
Success Factors:

- IMS based services developed in minutes
- IMS based services developed as new business needs
- IMS based services in easy drag and drop studio
- IMS based services immediately available
- No New IMS Application code is generated

Mainframe Integration Issues and Opportunities



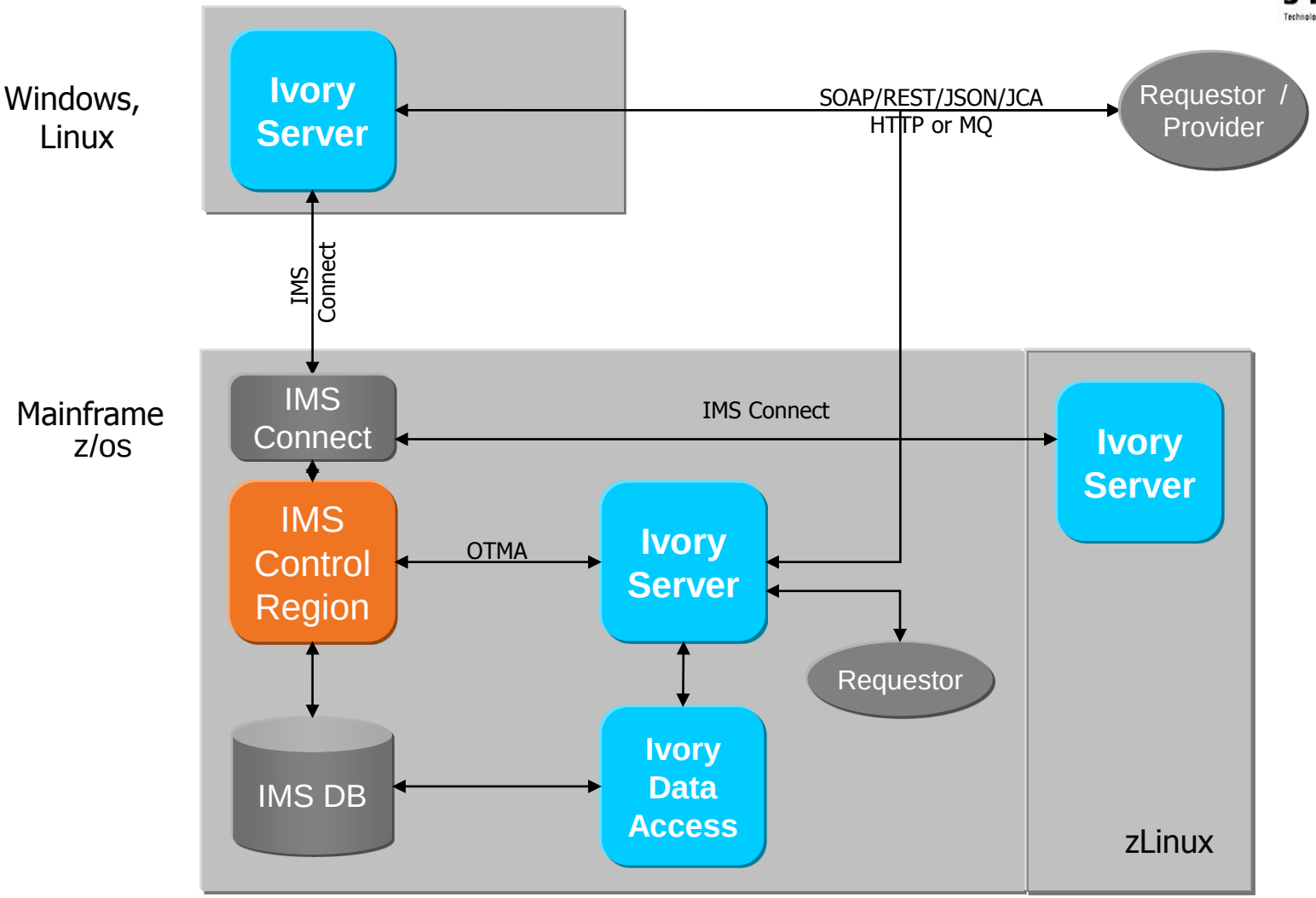
Cloud to Mainframe Integration



New Development Paradigm

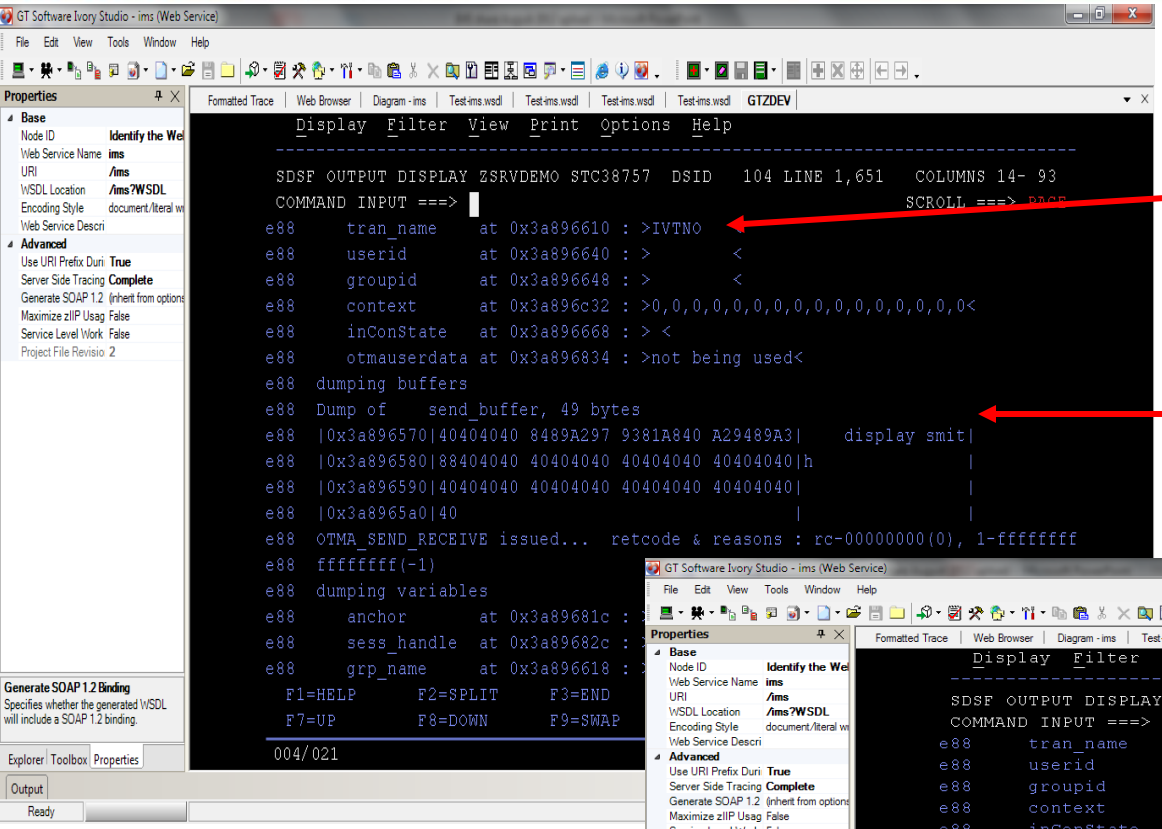
- Integrated drag and drop graphical environment(No coding)
- One Tool no other pre-reqs.
  WSDL-First design
  WSDL Wizard
- Design once, deploy many:
  - Started Task (OTMA)
  - CICS
  - Linux for SystemZ (SUSE or Redhat)
  - Windows (IMS Connect)
  - Linux (IMS Connect)
- Once designed available via:
  - Web Services (WSDL)
  - REST-ful services
  - JSON
  - JCA

Ivory Runtime Architecture



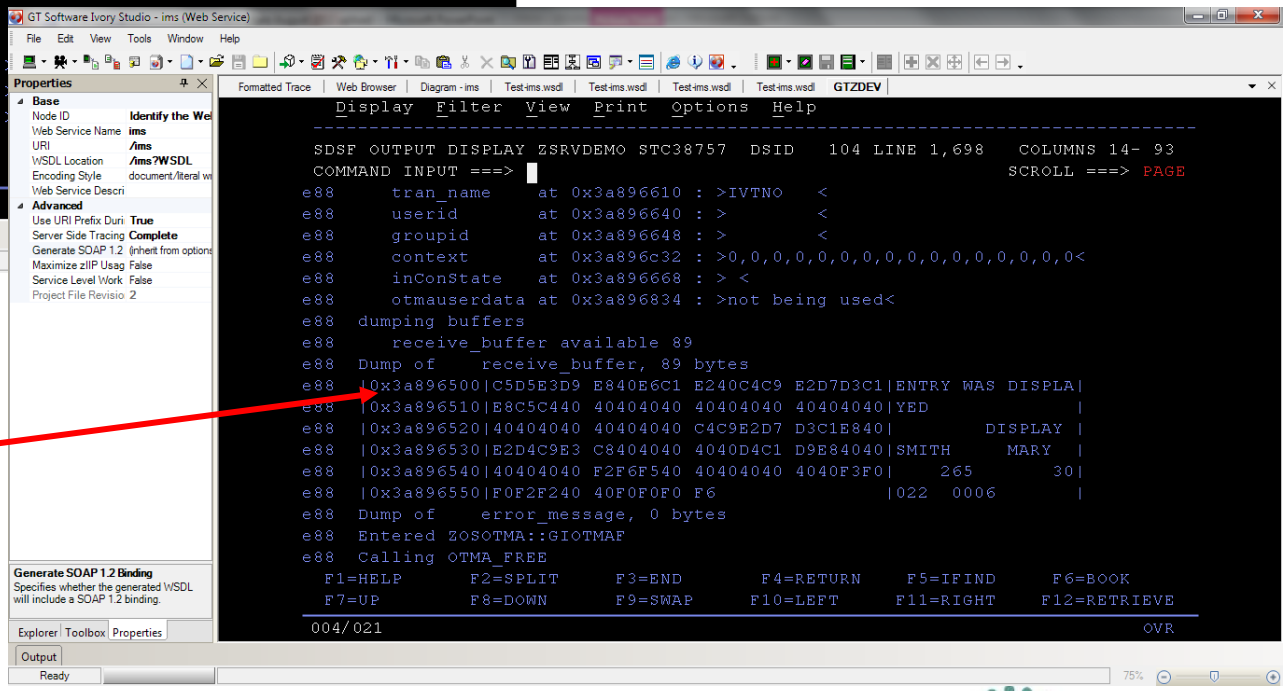
Hard Questions

- Can I get IMS data for use in the new systems?
- Can I get IMS transactions easily incorporated into the new systems?
- What about the others(CICS,IDMS/DC, IDEAL, NATURAL,etc.?
- Do you have the need for 1 IMS tran per service with no other mainframe artifacts?
- Are you are at the current latest edition/version of IMS?
- Do you only want to run the services strictly on the mainframe?
- Do you only have simple IMS transactions, no conversational IMS transactions?
- Do I need IMS calling out to other distributed systems?



Trancode(IVTNO)

Intput



Output

(LL,ZZ,Trancode,DATA)

REST and SOAP(Web Services)

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:s0="urn:ims2TNS">
  <soap:Body>
    <s0:getInfo>
      <s0:inCommand>display</s0:inCommand>
      <s0:inLastName>smith</s0:inLastName>
    </s0:getInfo>
  </soap:Body>
</soap:Envelope
```

Input

```
http://gtzdev.gtsoftware.com:20180/soap/ims2?RESTRequest=getinfo
&inCommand=display&inLastName=smith
```

```
<?xml version="1.0" encoding="utf-8"?>
<soap:Envelope xmlns:soap="http://schemas.xmlsoap.org/soap/envelope/"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:ns1="urn:ims2TNS">
 <soap:Body>
  <getInfoResponse xmlns="urn:ims2TNS">
   <outDataType>
    <outLastName>SMITH</outLastName>
    <outFirstName>MARY</outFirstName>
    <outExtension>265</outExtension>
    <outZipCode>30022</outZipCode>
   </outDataType>
  </getInfoResponse>
 </soap:Body>
</soap:Envelope>
```

Output

```
<?xml version="1.0" encoding="utf-8" ?>
- <getinfoResponse>
- <outDataType>
  <outLastName>SMITH</outLastName>
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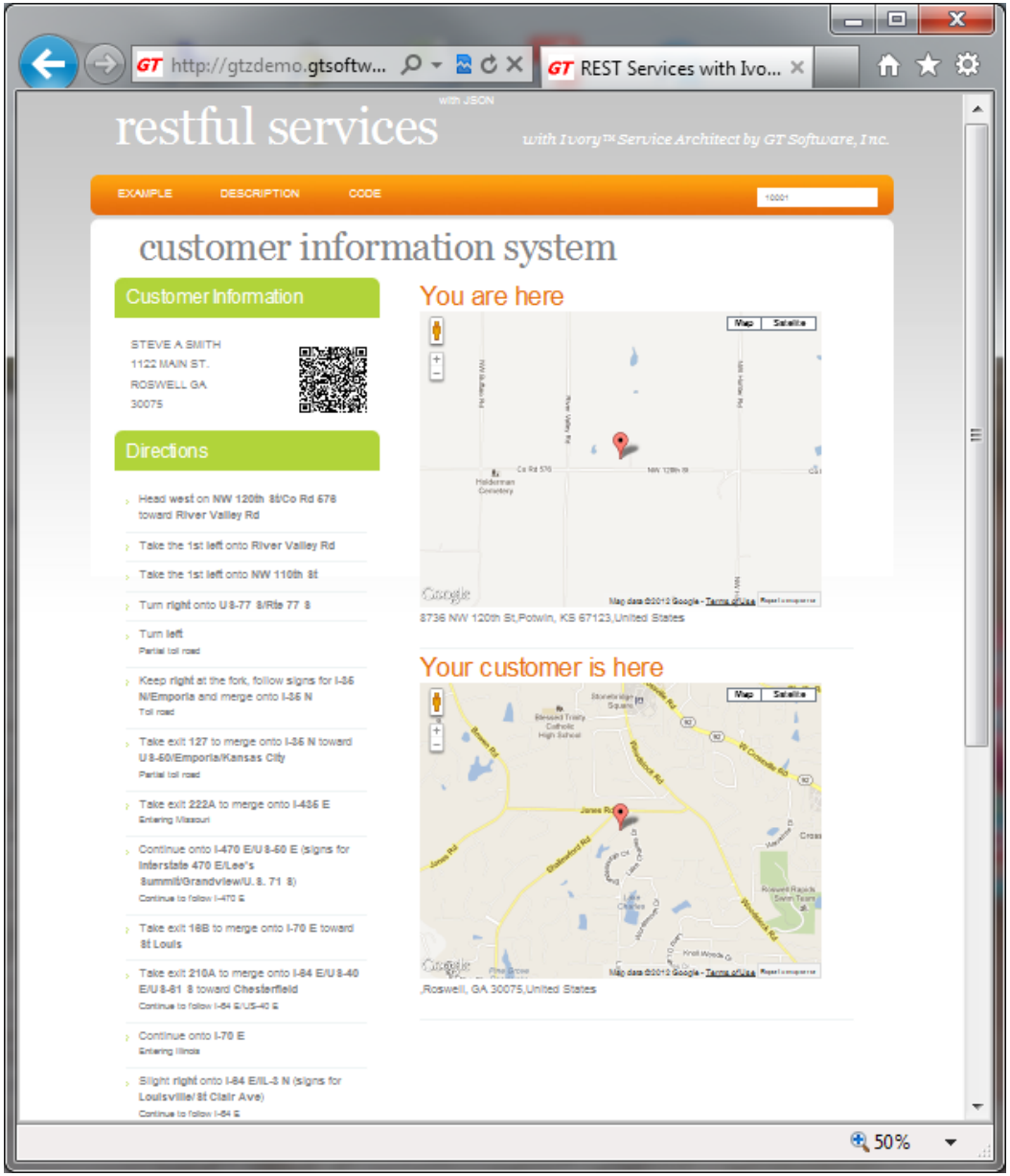
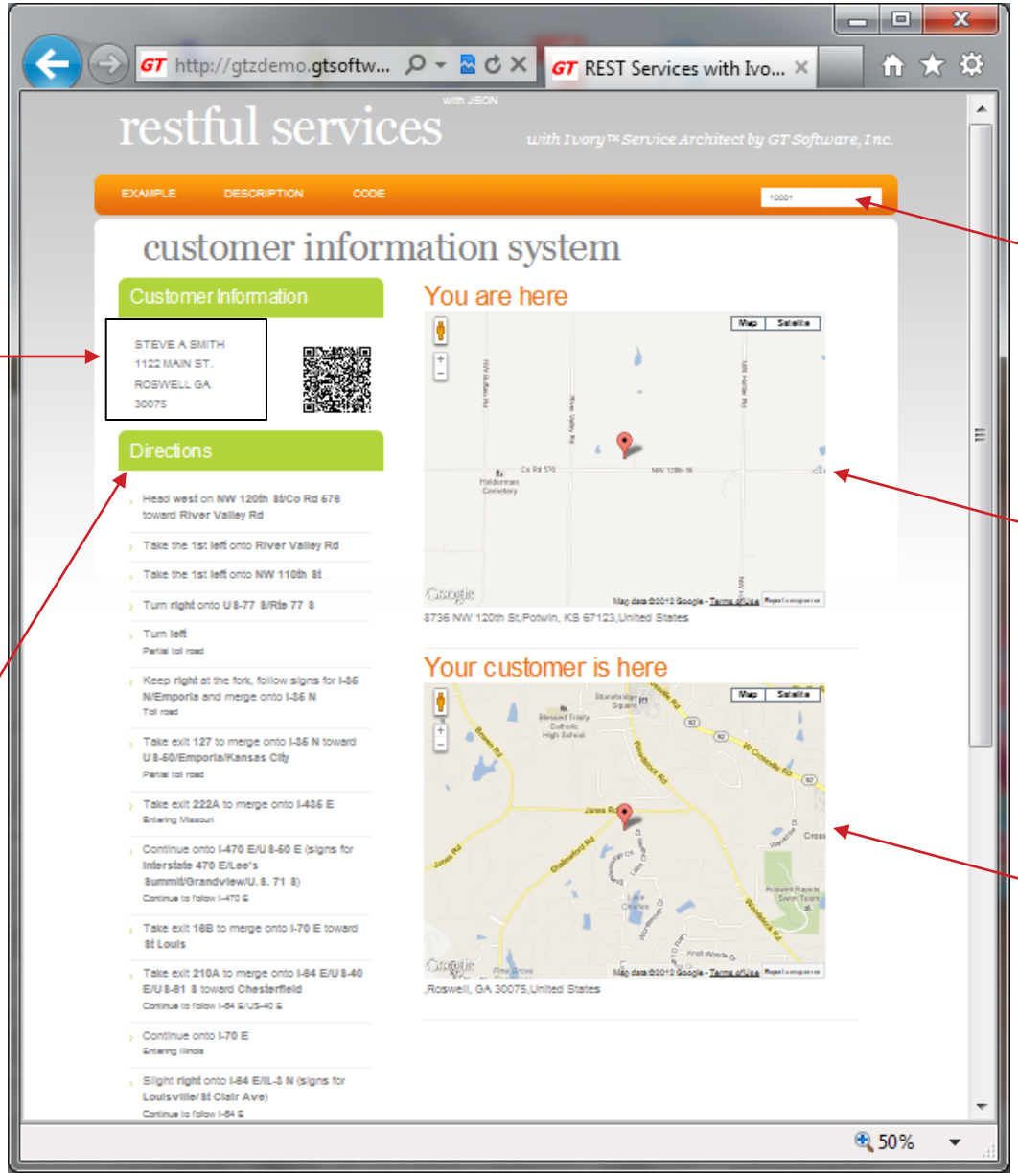
  </getinfoResponse
```

SOAP

REST





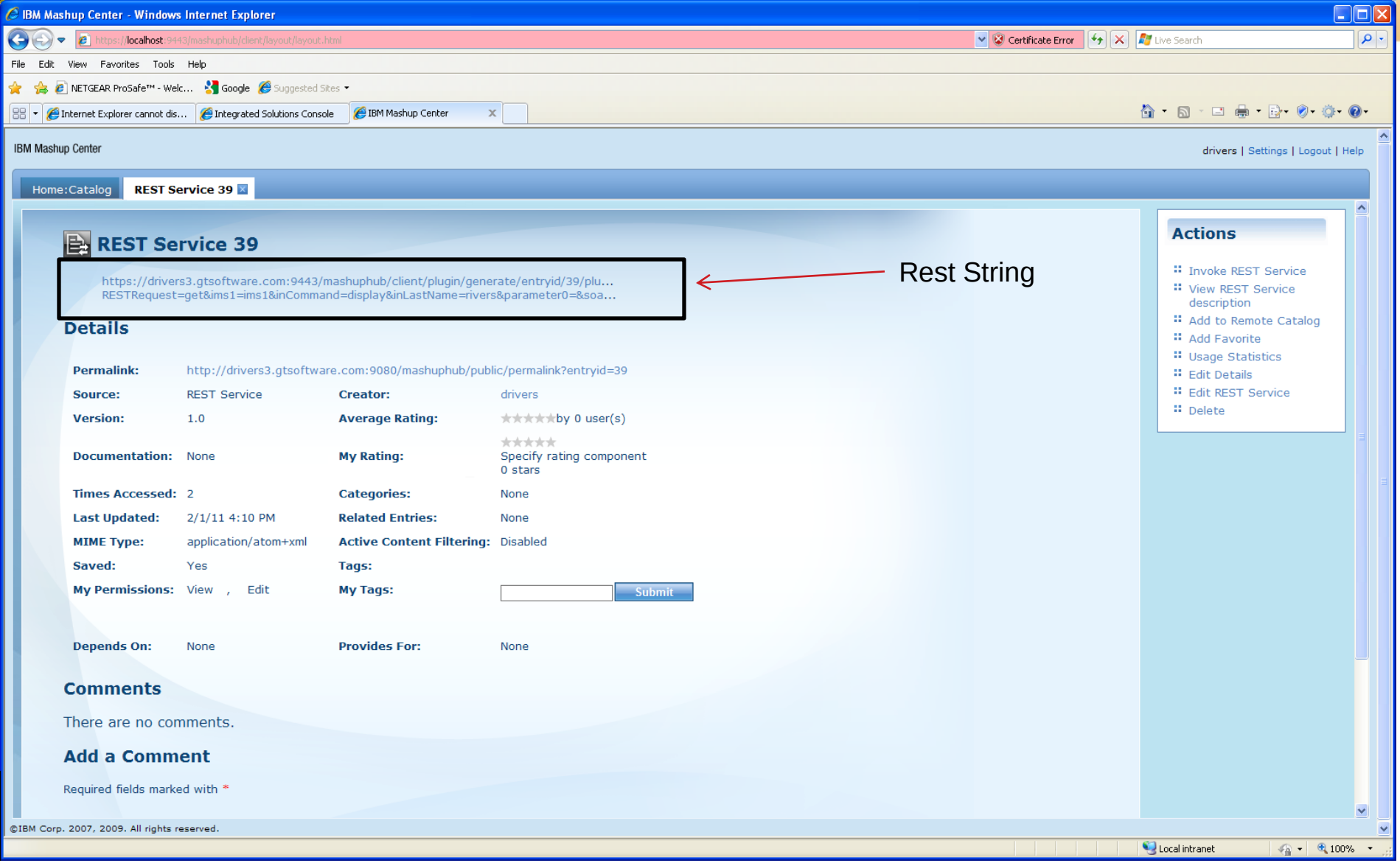
IMS Output

IMS Input

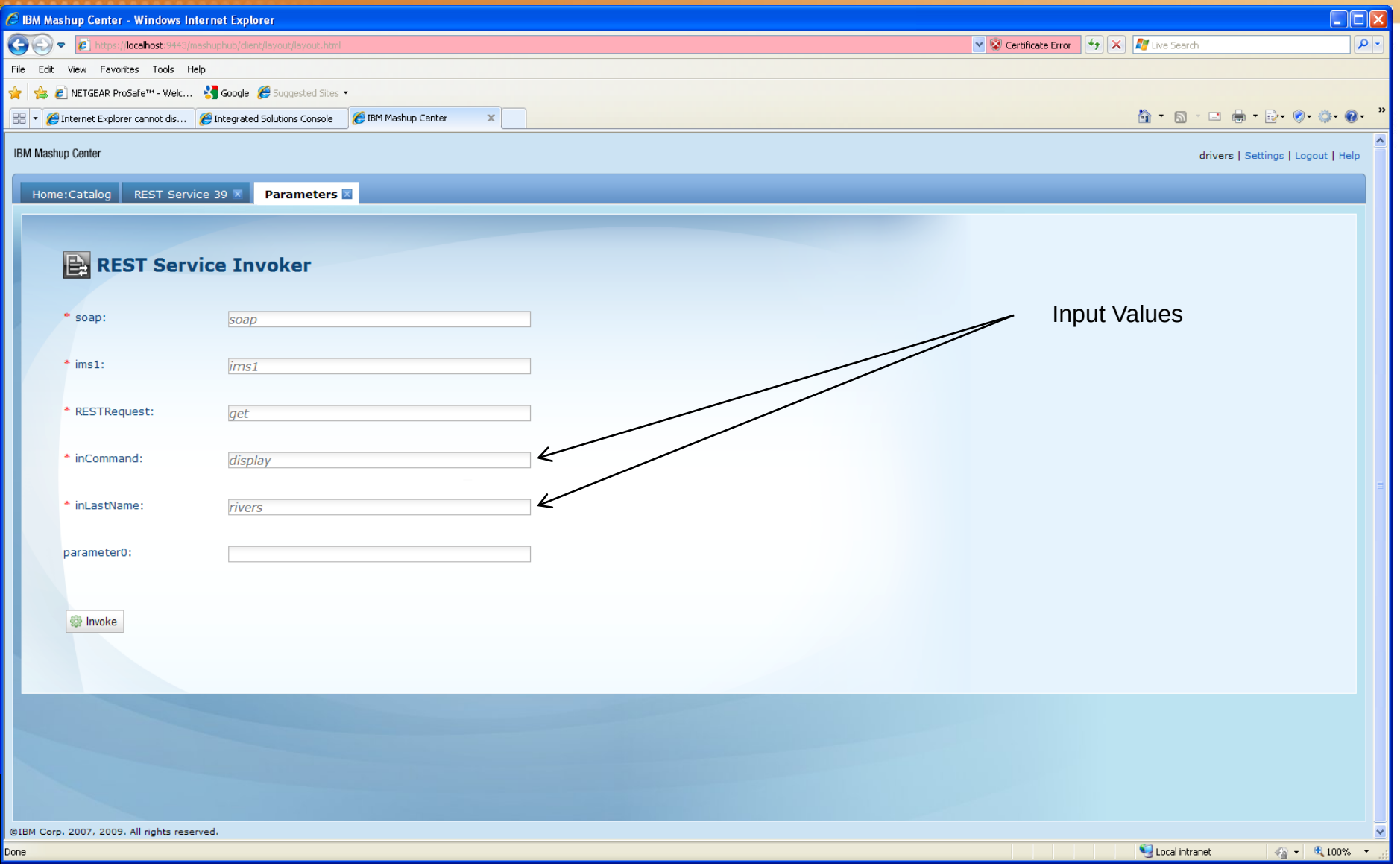
MapQuest
Driving directions

Google Maps
My location

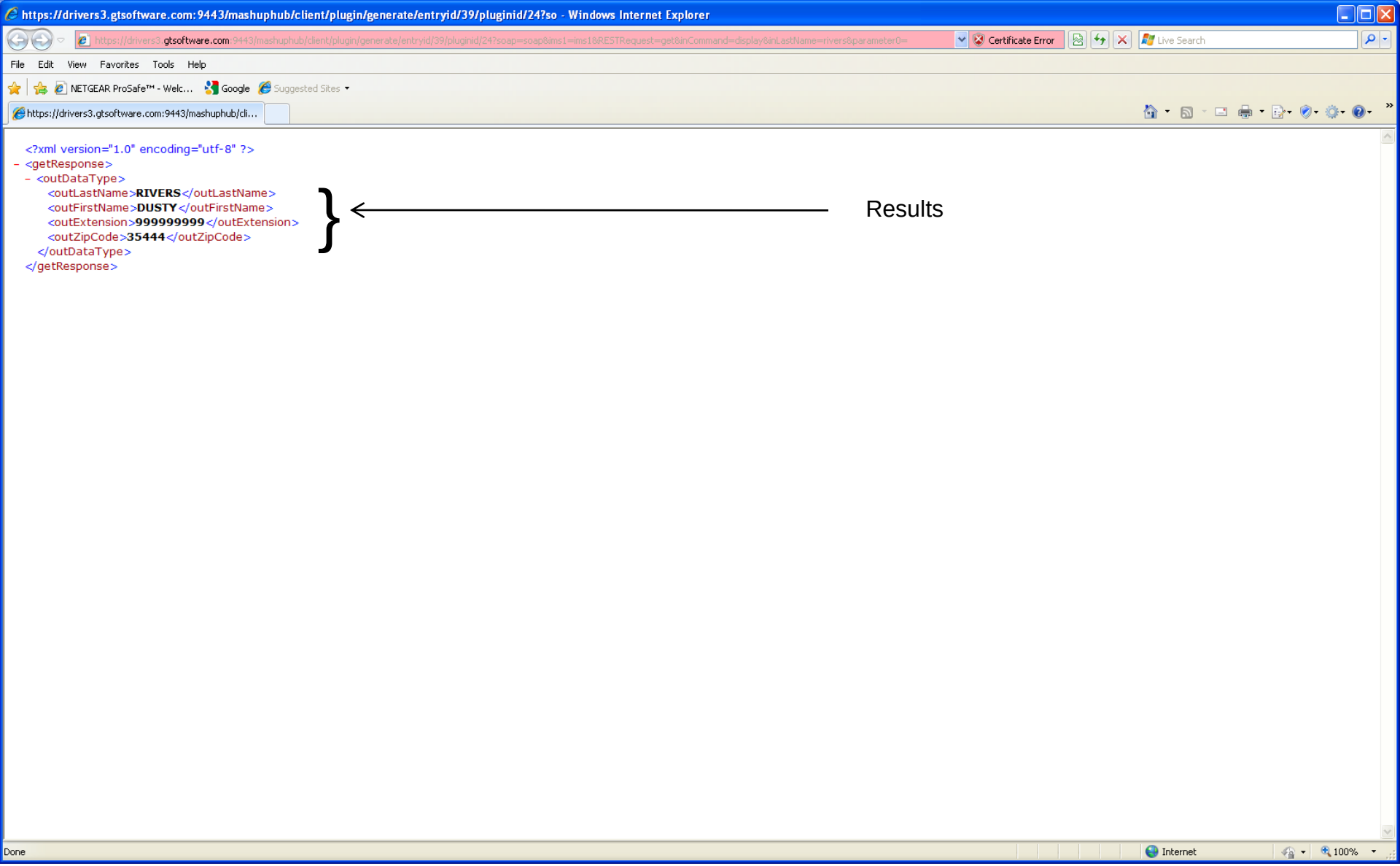
Google Maps
Cust location

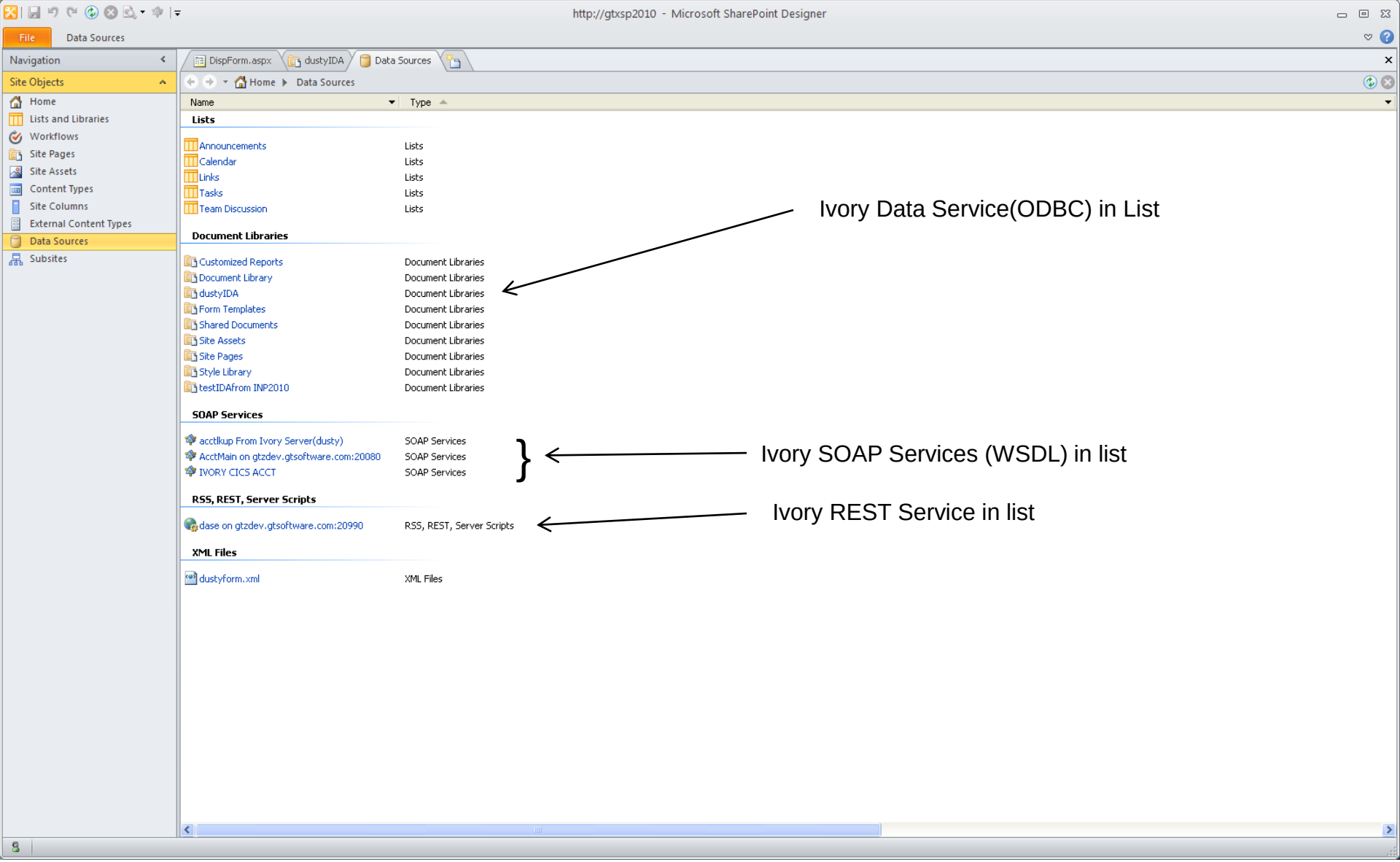


IBM Mashup Hub(InfoSphere MashupHub) , and Ivory REST Service(IMS) has been added to the hub as a listed REST service

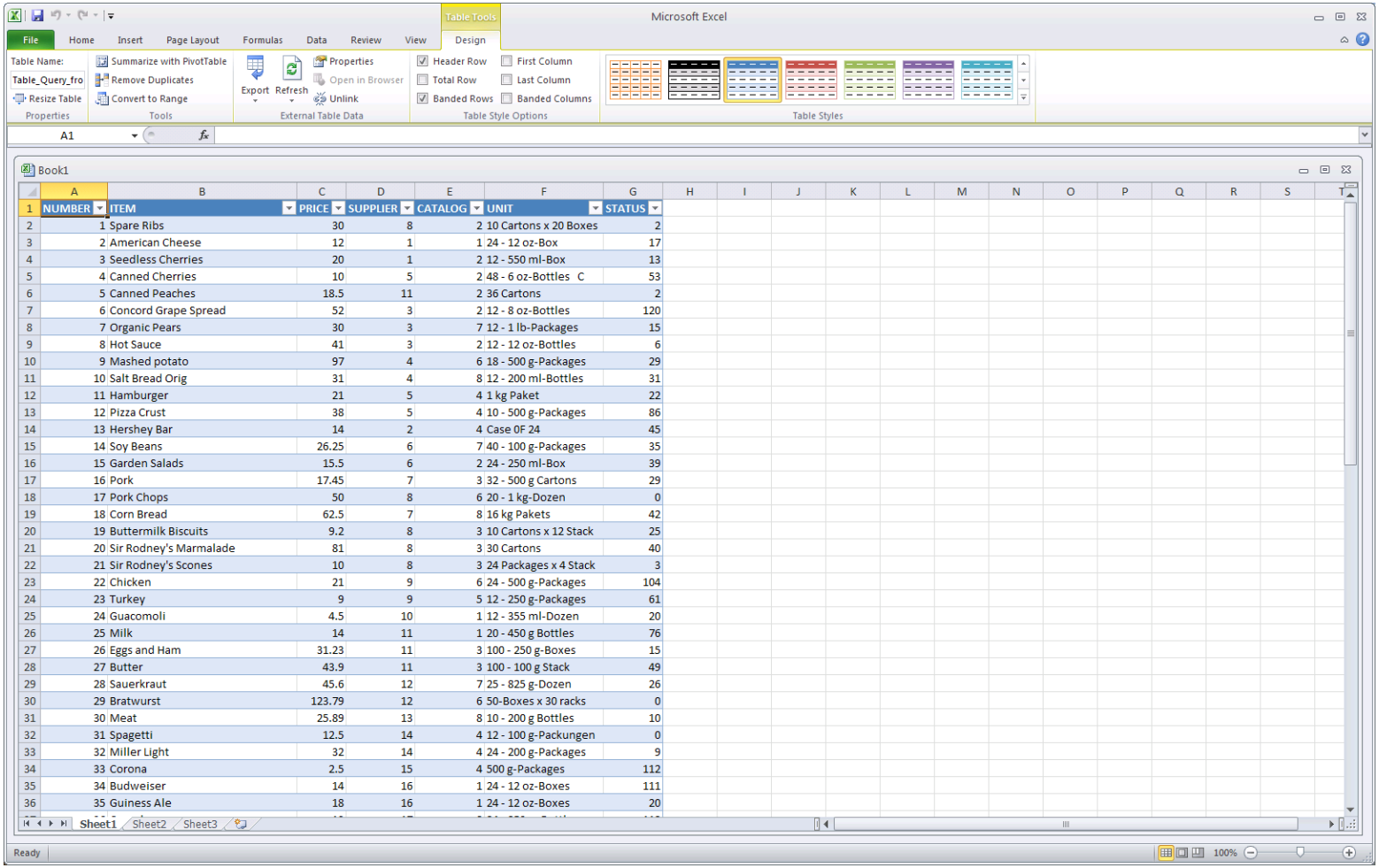


IBM Mashup Hub(InfoSphere MashupHub) , REST Service Invoker


https://drivers3.gtsoftware.com:9443/mashuphub/client/plugin/generate/entryid/39/pluginid/24?so - Windows Internet Explorer
Certificate Error
Live Search
File Edit View Favorites Tools Help
NETGEAR ProSafe™ - Welc...
Google
Suggested Sites
https://drivers3.gtsoftware.com:9443/mashuphub/cli...
<?xml version="1.0" encoding="utf-8" ?>
<getResponse>
<outDataType>
<outLastName>RIVERS</outLastName>
<outFirstName>DUSTY</outFirstName>
<outExtension>999999999</outExtension>
<outZipCode>35444</outZipCode>
</outDataType>
</getResponse>
Results
Done
Internet
100%



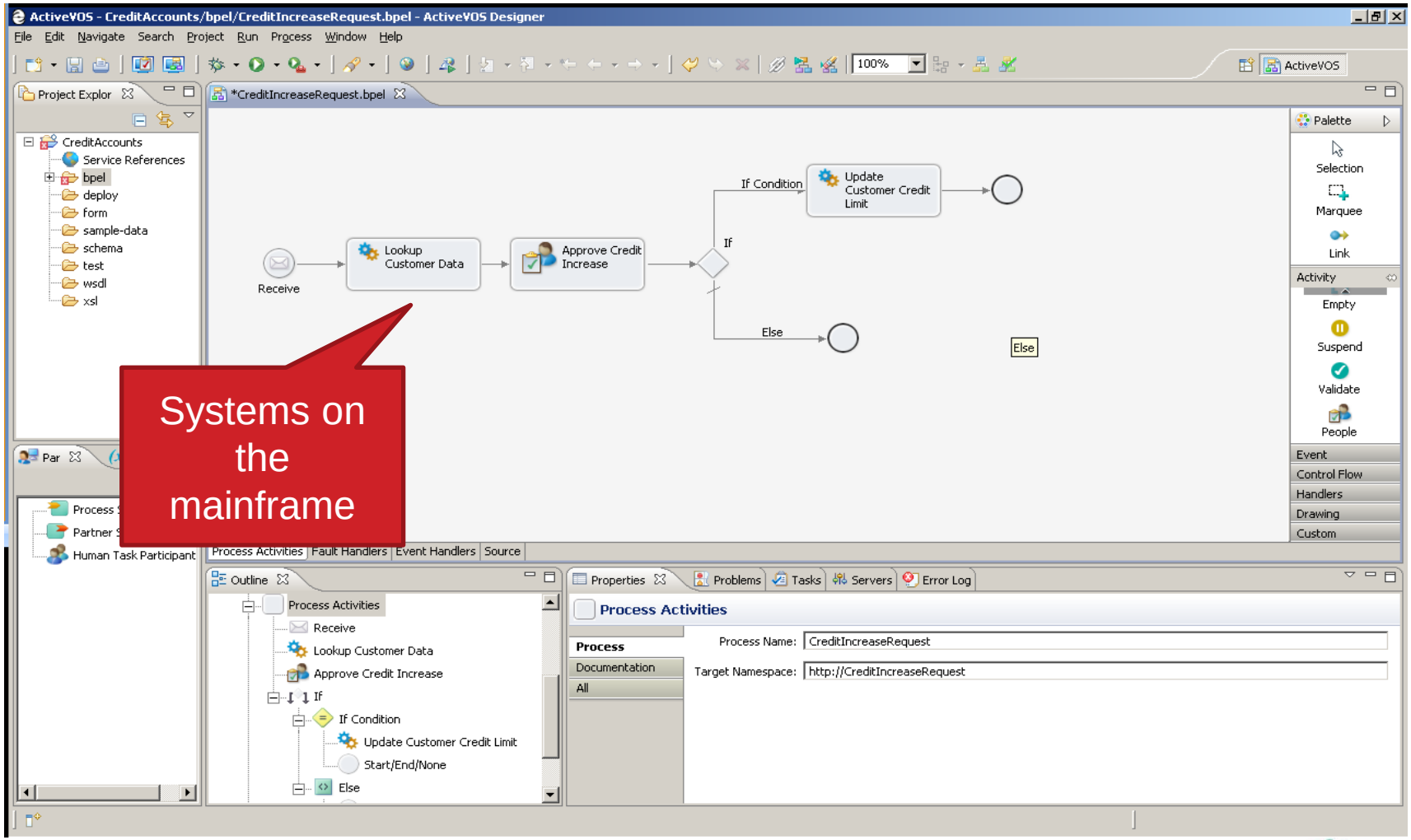
SharePoint 2010 Designer



NUMBER	ITEM	PRICE	SUPPLIER	CATALOG	UNIT	STATUS
1	Spare Ribs	30	8	2	10 Cartons x 20 Boxes	2
2	American Cheese	12	1	1	24 - 12 oz-Box	17
3	Seedless Cherries	20	1	2	12 - 550 ml-Box	13
4	Canned Cherries	10	5	2	48 - 6 oz-Bottles C	53
5	Canned Peaches	18.5	11	2	36 Cartons	2
6	Concord Grape Spread	52	3	2	12 - 8 oz-Bottles	120
7	Organic Pears	30	3	7	12 - 1 lb-Packages	15
8	Hot Sauce	41	3	2	12 - 12 oz-Bottles	6
9	Mashed potato	97	4	6	18 - 500 g-Packages	29
10	Salt Bread Orig	31	4	8	12 - 200 ml-Bottles	31
11	Hamburger	21	5	4	1 kg Paket	22
12	Pizza Crust	38	5	4	10 - 500 g-Packages	86
13	Hershey Bar	14	2	4	Case 0F 24	45
14	Soy Beans	26.25	6	7	40 - 100 g-Packages	35
15	Garden Salads	15.5	6	2	24 - 250 ml-Box	39
16	Pork	17.45	7	3	32 - 500 g Cartons	29
17	Pork Chops	50	8	6	20 - 1 kg-Dozen	0
18	Corn Bread	62.5	7	8	16 kg Pakets	42
19	Buttermilk Biscuits	9.2	8	3	10 Cartons x 12 Stack	25
20	Sir Rodney's Marmalade	81	8	3	30 Cartons	40
21	Sir Rodney's Scones	10	8	3	24 Packages x 4 Stack	3
22	Chicken	21	9	6	24 - 500 g-Packages	104
23	Turkey	9	9	5	12 - 250 g-Packages	61
24	Guacomoli	4.5	10	1	12 - 355 ml-Dozen	20
25	Milk	14	11	1	20 - 450 g Bottles	76
26	Eggs and Ham	31.23	11	3	100 - 250 g-Boxes	15
27	Butter	43.9	11	3	100 - 100 g Stack	49
28	Sauerkraut	45.6	12	7	25 - 825 g-Dozen	26
29	Bratwurst	123.79	12	6	50-Boxes x 30 racks	0
30	Meat	25.89	13	8	10 - 200 g Bottles	10
31	Spagetti	12.5	14	4	12 - 100 g-Packungen	0
32	Miller Light	32	14	4	24 - 200 g-Packages	9
33	Corona	2.5	15	4	500 g-Packages	112
34	Budweiser	14	16	1	24 - 12 oz-Boxes	111
35	Guiness Ale	18	16	1	24 - 12 oz-Boxes	20

IMS data (via ODBC) in a Microsoft Excel Spreadsheet

Ivory and BPMN(ActiveVOS)



Issues with Services on the Mainframe

- SOAP/XML Processing on the GPP = More MIPS
- New Compiled programs running on GPP = More MIPS
- More installed programs/products = More Support $$$
- No zIIP or zAAP use the IFL

IMS and Ivory

- Service Enable IMS transactions
  - Including Support for IMS Conversational
  - Support for MFS as service definition
  - LTERM Name if needed
  - Composite Service Support
  - MFS Mod 3
  - Outbound Support to any remote system
  - REST Support for IMS
  - JSON Support
  - JCA Support for IMS
  - Message “chunking”

IMS and Ivory Other Implementations

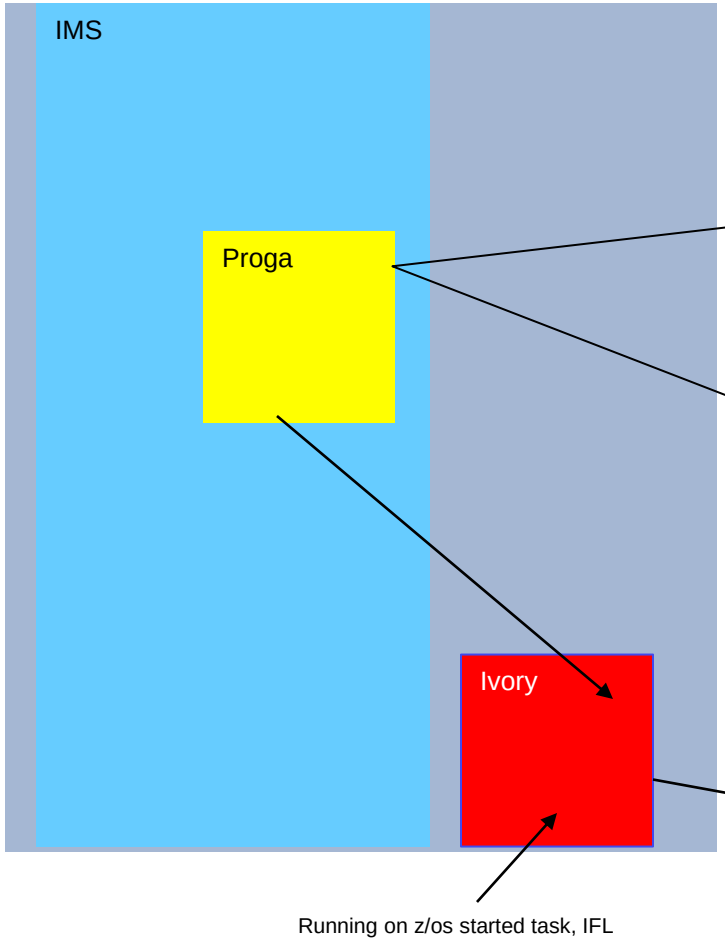
- Batch Support
  - Enabling IMS Batch jobs to call external services
  - Server can be linked in for performance
  - All necessary code and linkage created

- Complete IMS Outbound Support
  - IMS transactions enabled to call external services
    (like WAS, SAP, Oracle, Sharepoint etc)

Calling Distributed Services from IMS

- Import the WSDL from the remote server
- Map the Inputs and outputs required
- Correctly map WSDL data-types to mainframe data types
- Correctly map into COBOL or PL/1
- Create a calling structure for the IMS program
- Implement the Service/program

IMS and Outbound




```
01 IVORYH.
   .....
   02 COPYBOOKS PIC X(60).
   02 DUSTYIN REDEFINES COPYBOOKS
      05 LASTNAME PIC X(30).
      05 FIRSTNAME PIC X(30).
      05 STOCKSYMBOL PIC X(30).
   02 DUSTYOUT REDEFINES COPYBOOKS.
      05 NUMBEROFSHARES PIC S9(9) COMP-5.
      05 SHAREPRICE PIC X(30).
      05 CREDITLIMIT PIC X(30).
      05 ACCTNUM PIC X(30).

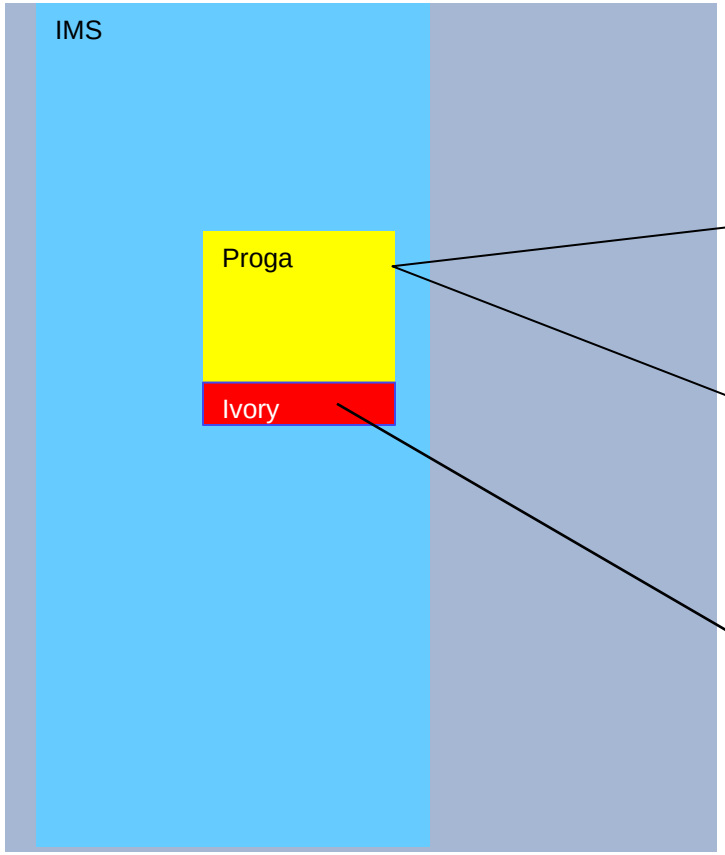
CALL 'GIICALZ' USING IVORY-TOKEN, IVORY-CALL-INIT
                     RETURNING RC.

CALL 'GIICALZ' USING IVORY-TOKEN, IVORY-CALL-PROCESS,
                     IVORYH, IVORY-LENGTH
                     RETURNING RC.

CALL 'GIICALZ' USING IVORY-TOKEN, IVORY-CALL-TERM
                     RETURNING RC.
```

Distributed Systems

IMS and Outbound

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01 IVORYH.
    .....
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CALL 'GIICALZ' USING IVORY-TOKEN, IVORY-CALL-INLINE,
                     IVORYH, IVORY-LENGTH
                     RETURNING RC.

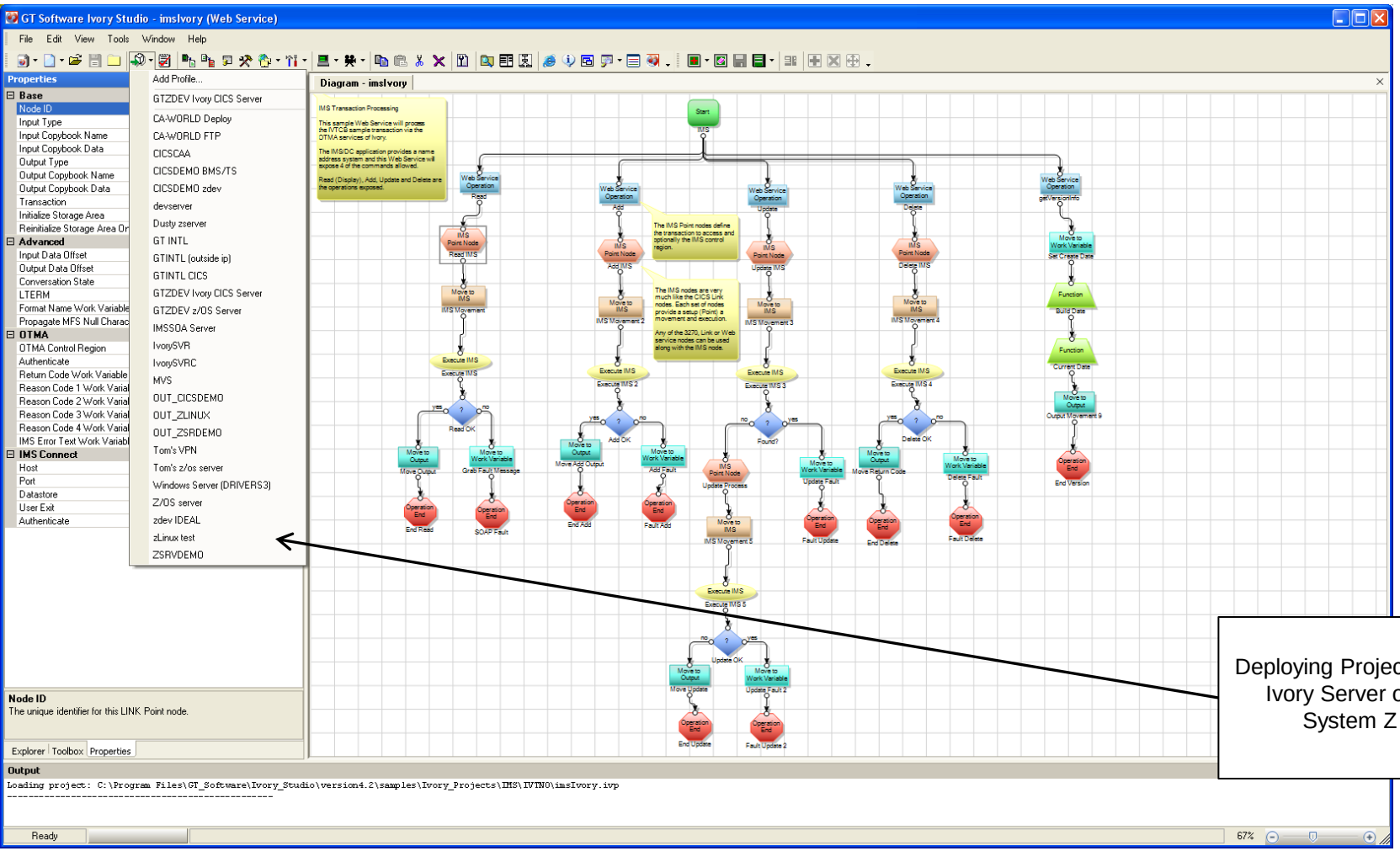
CALL 'GIICALZ' USING IVORY-TOKEN, IVORY-CALL-TERM
                     RETURNING RC.
```

Distributed Systems

Real World:

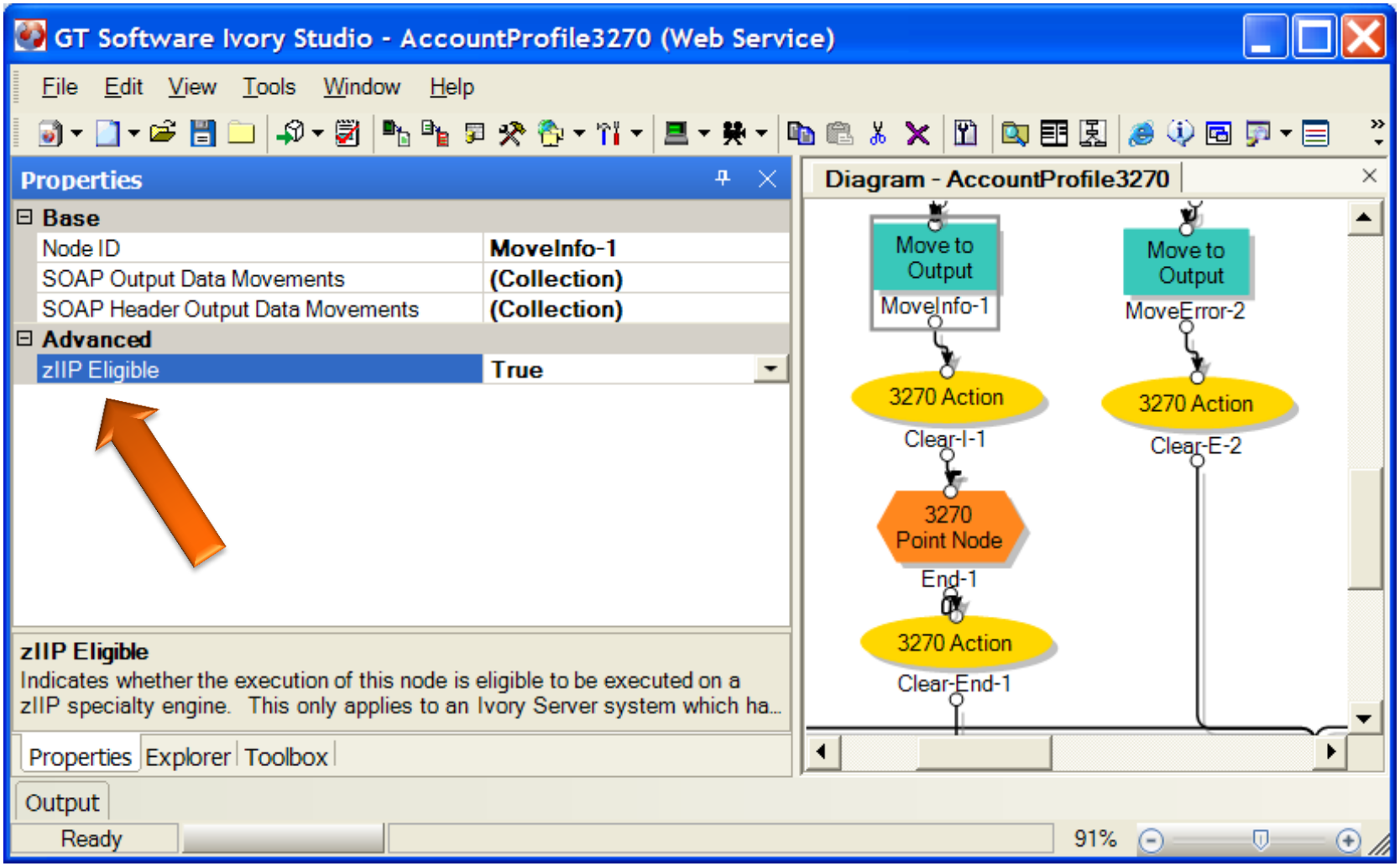
- Bank (Banking Application)
- Insurance (Mobile Insurance Application for agents)
- Manufacturing (Automobile Engineering)
- Finance (Stock trading, financial tools)
- International Bank (Credit card processing, ATM)

Deploying to Linux on System Z



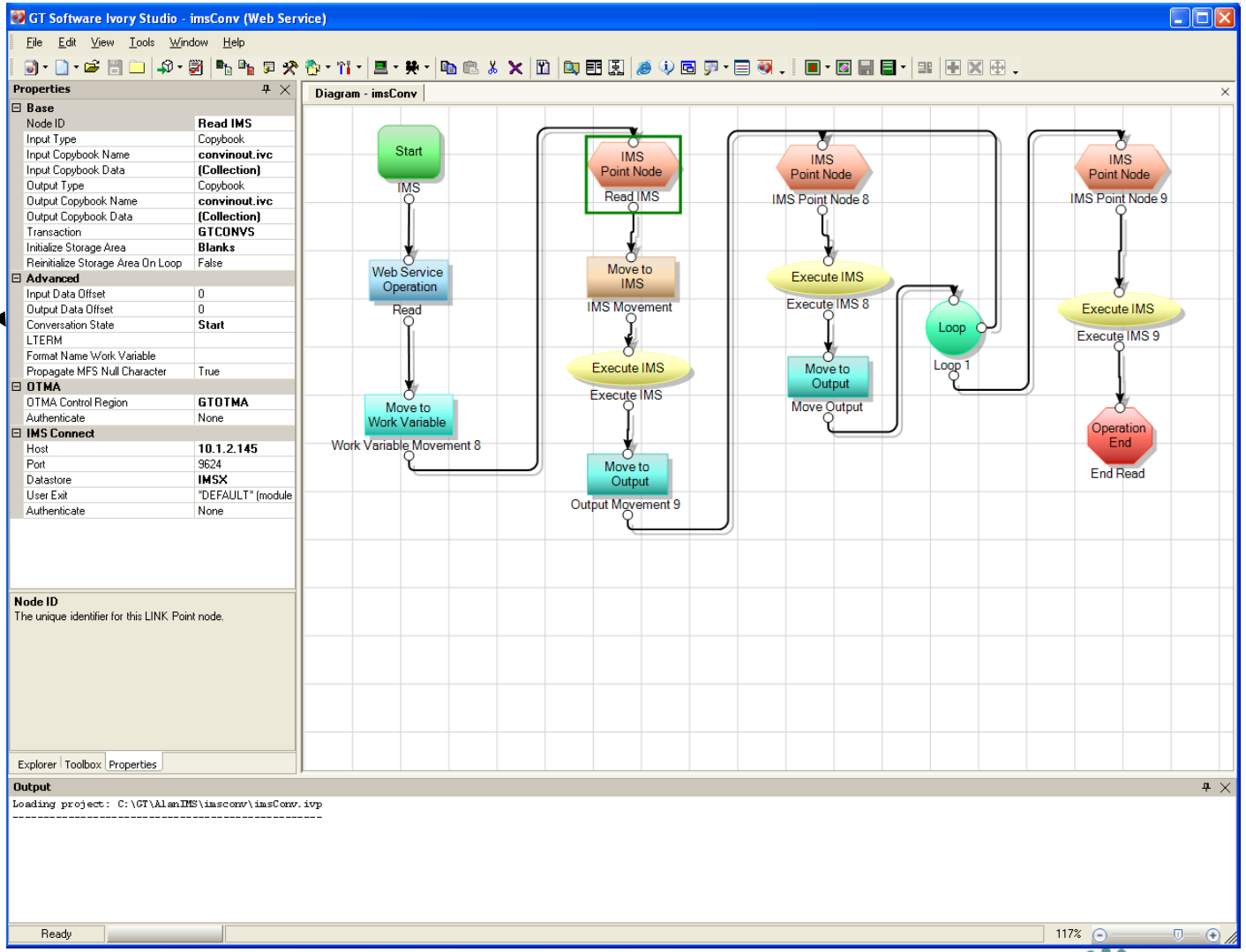
Deploying Project to Ivory Server on System Z

Ivory uses the zIIP



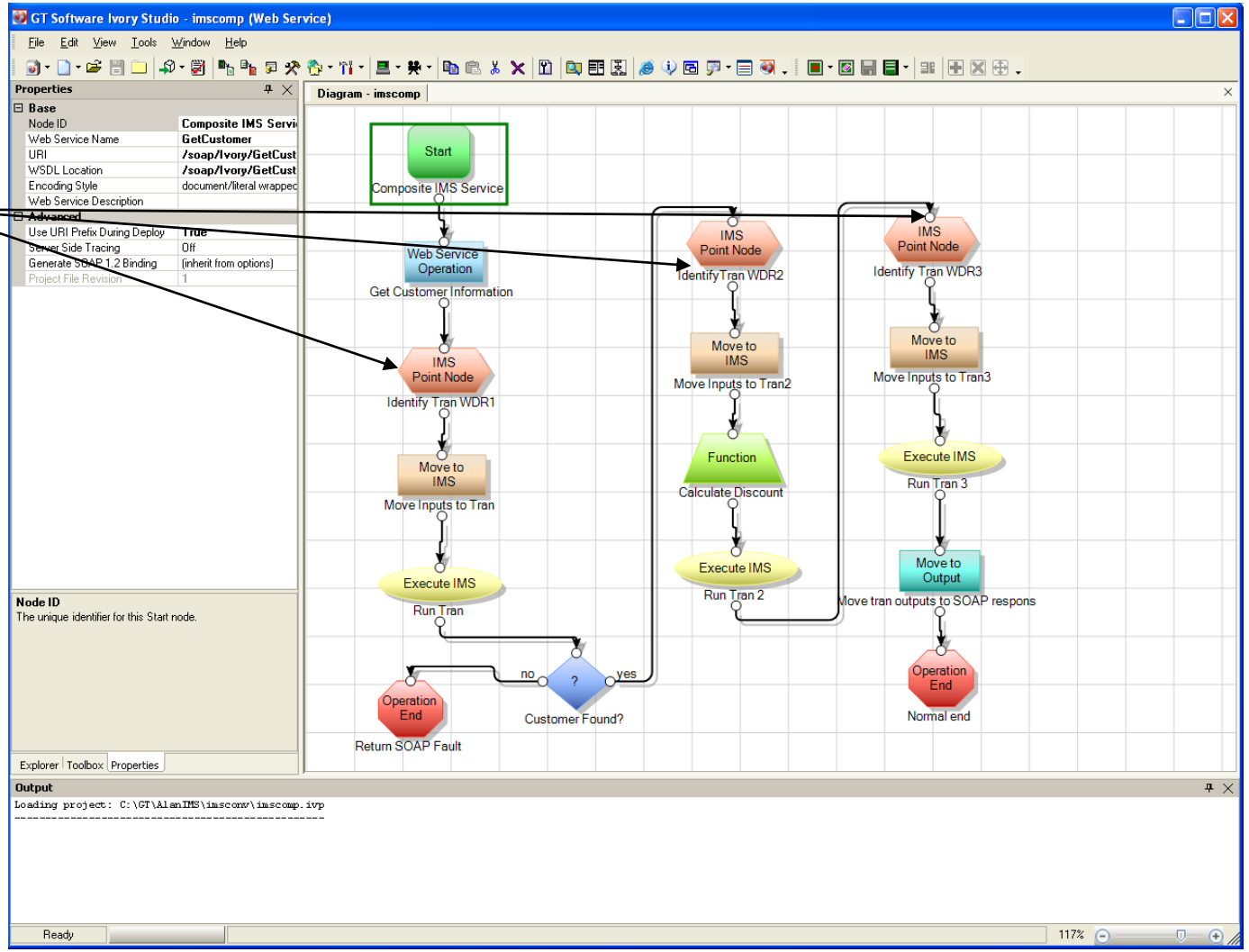
IMS Conversational as Service Easy!

Conversation State

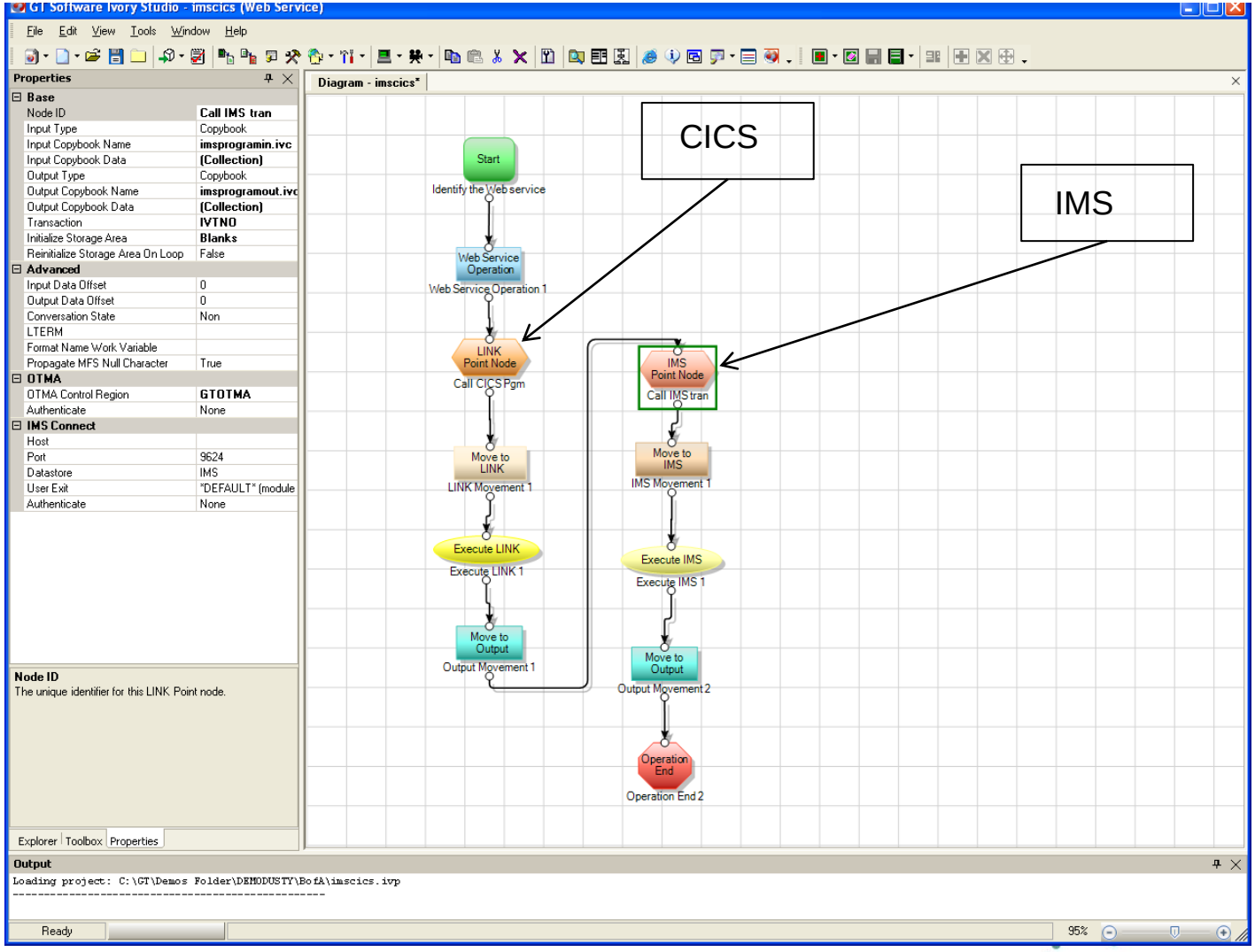


IMS Composite as Service Easy!!!

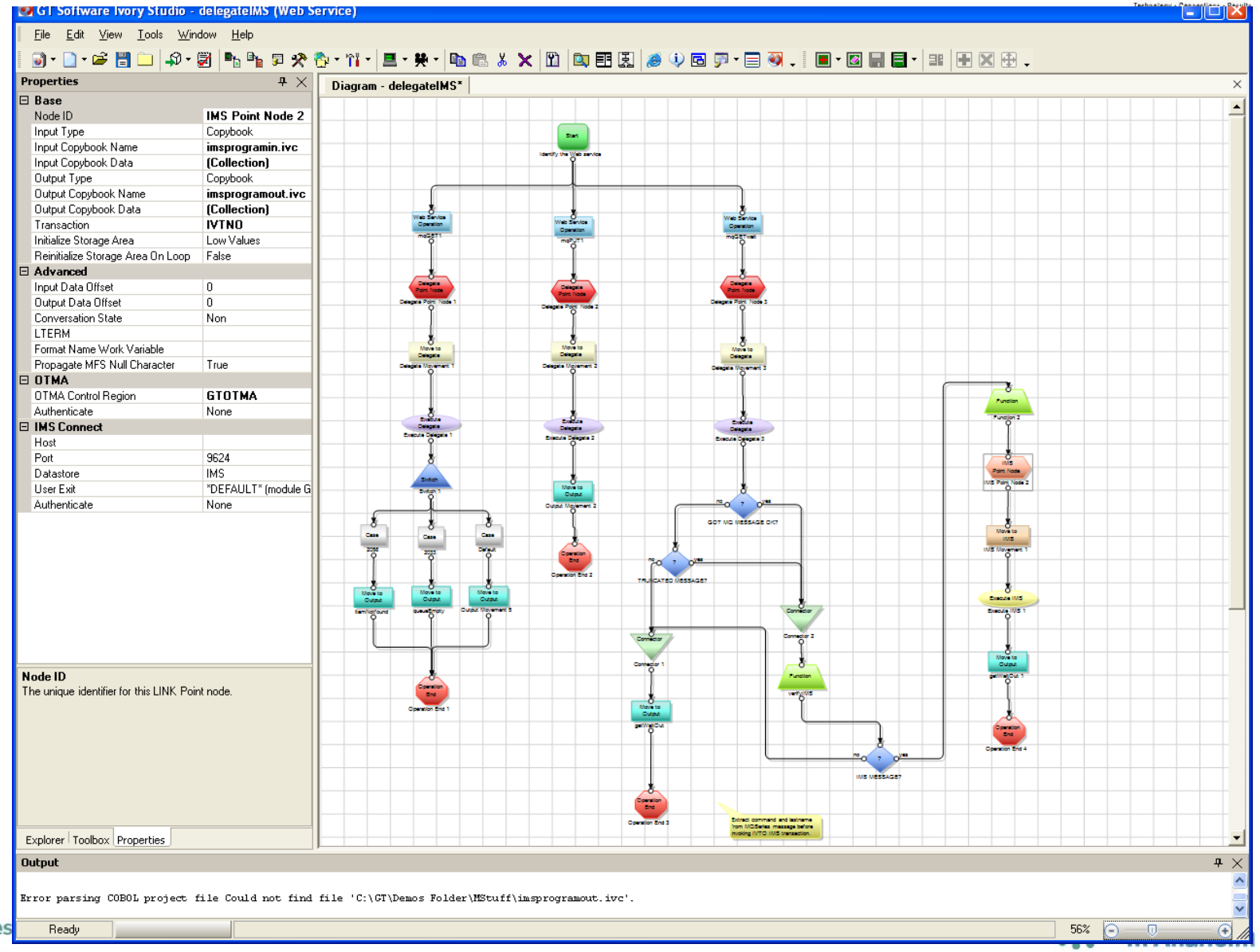
Multiple IMS Transactions



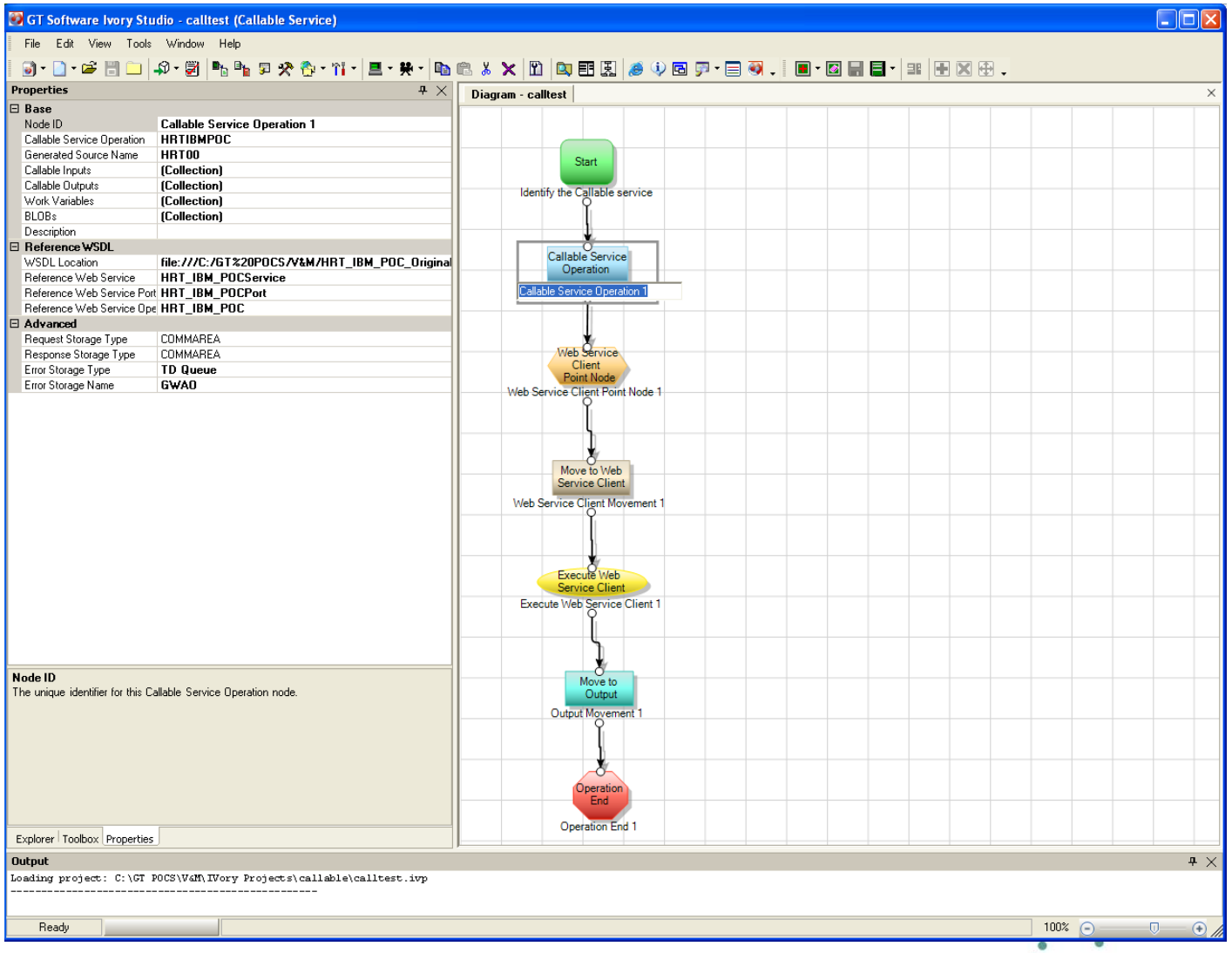
IMS & CICS in the same Service Easy!



Custom code, MQ and IMS Easy!



IMS Calling external services Easy!!



IMS Calling external services Easy!!

- IMS transactions calling SAP processes
- IMS transactions calling Tandem processes
- IMS transactions calling Oracle processes
- IMS transactions calling Microsoft Sharepoint
- IMS Batch jobs calling distributed services

IMS