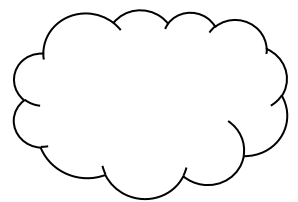
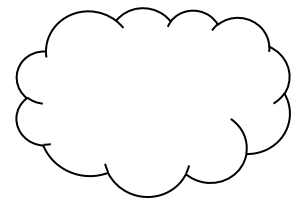


---

# Modernizing IMS.....



**Dusty Rivers**  
Principal Technical Architect  
GT Software

GOT IMS?



**GOT IMS?**



**NEED TO MODERNIZE!**

The top of the slide features a decorative header with a blue background. On the left, there is a stylized globe with red, white, and blue segments, surrounded by binary code (0s and 1s). A red and blue swoosh curves across the top. A black horizontal bar is positioned in the upper center, containing the text "GOT IMS?". A small black circle is centered below the bar.

GOT IMS?

# GOT IMS?

Need  
New  
Web  
Look and Feel

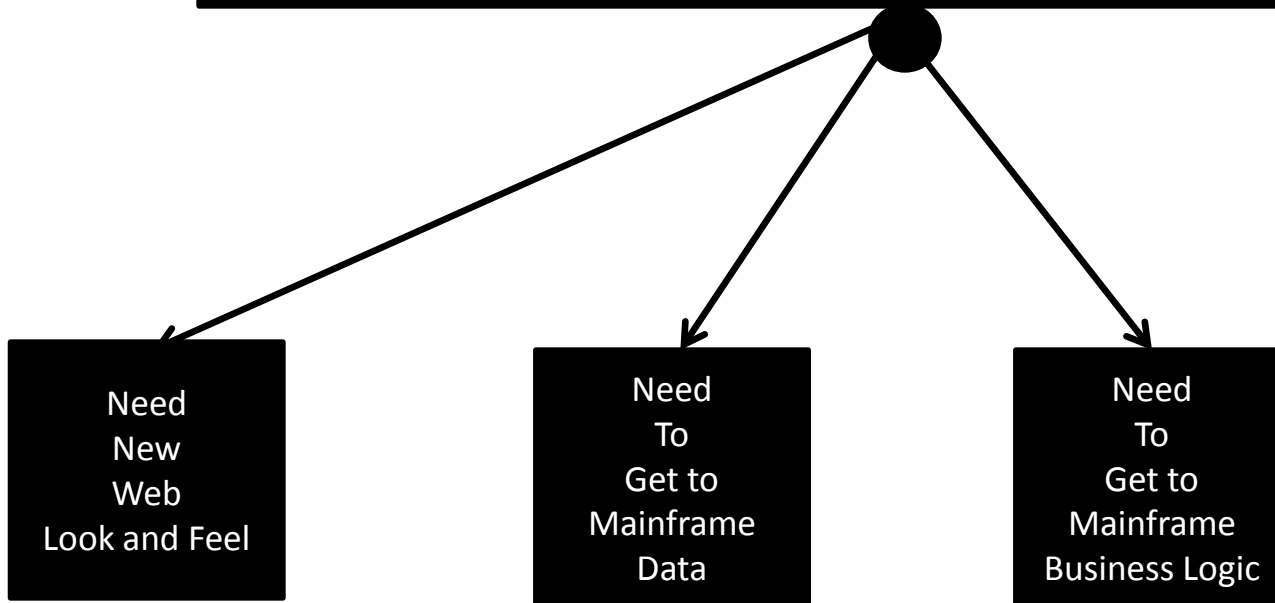
# GOT IMS?

```
graph TD; A[GOT IMS?] --> B[Need New Web Look and Feel]; A --> C[Need To Get to Mainframe Data];
```

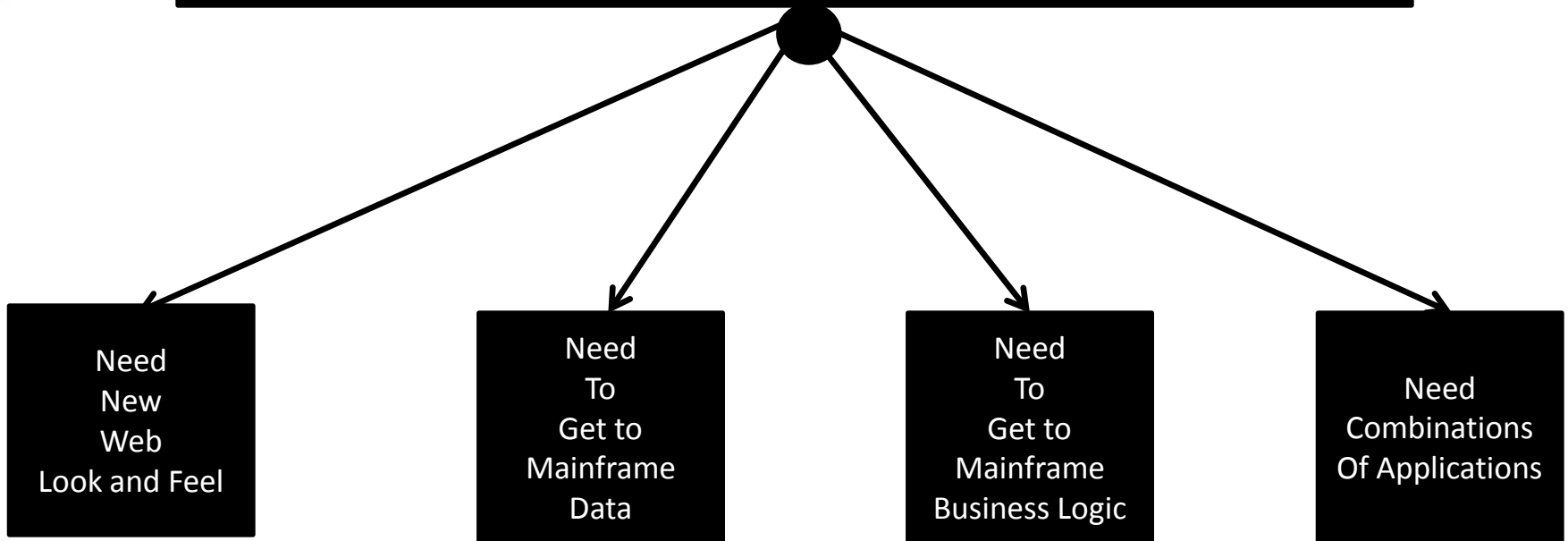
Need  
New  
Web  
Look and Feel

Need  
To  
Get to  
Mainframe  
Data

# GOT IMS?

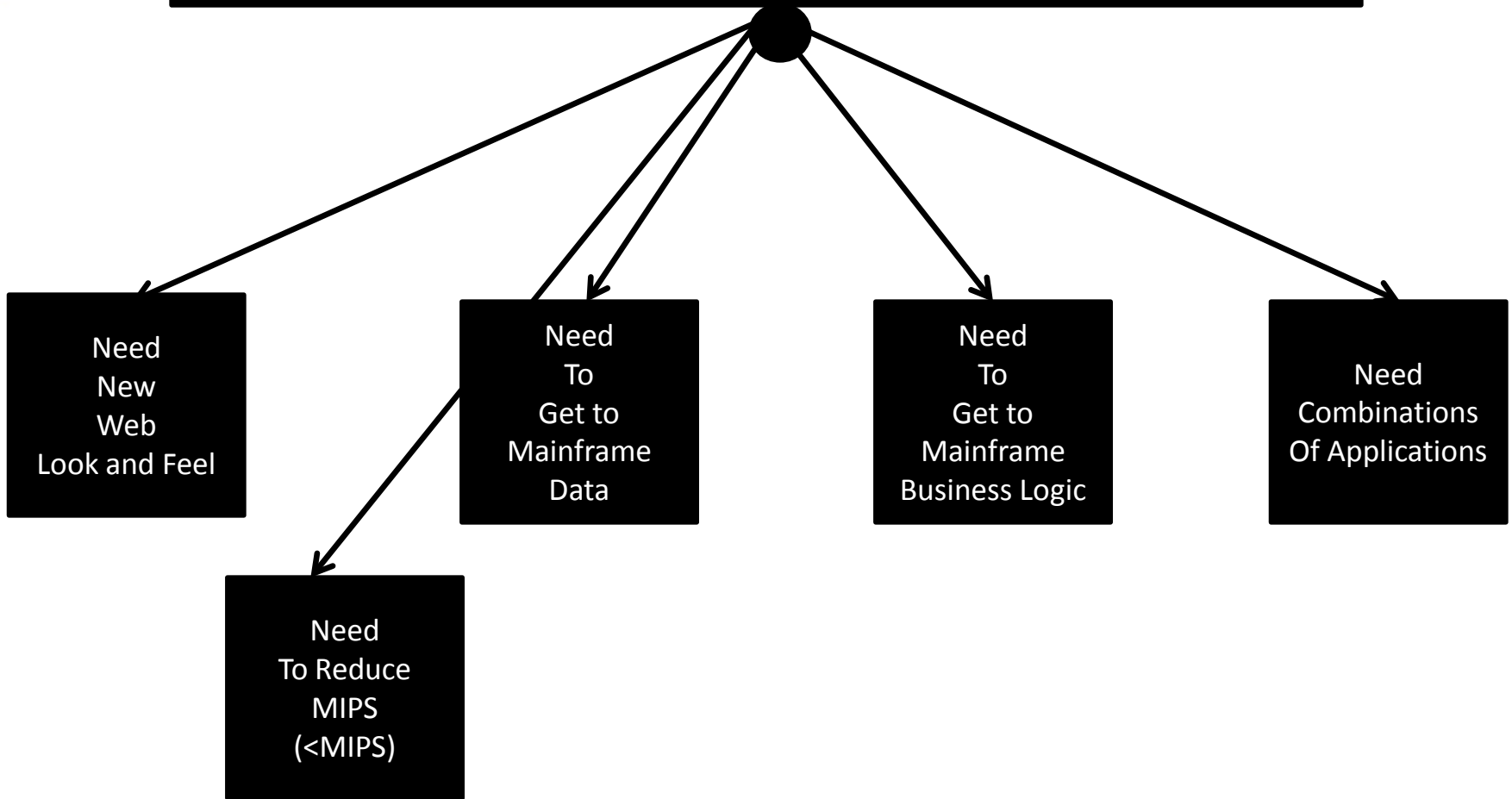


# GOT IMS?

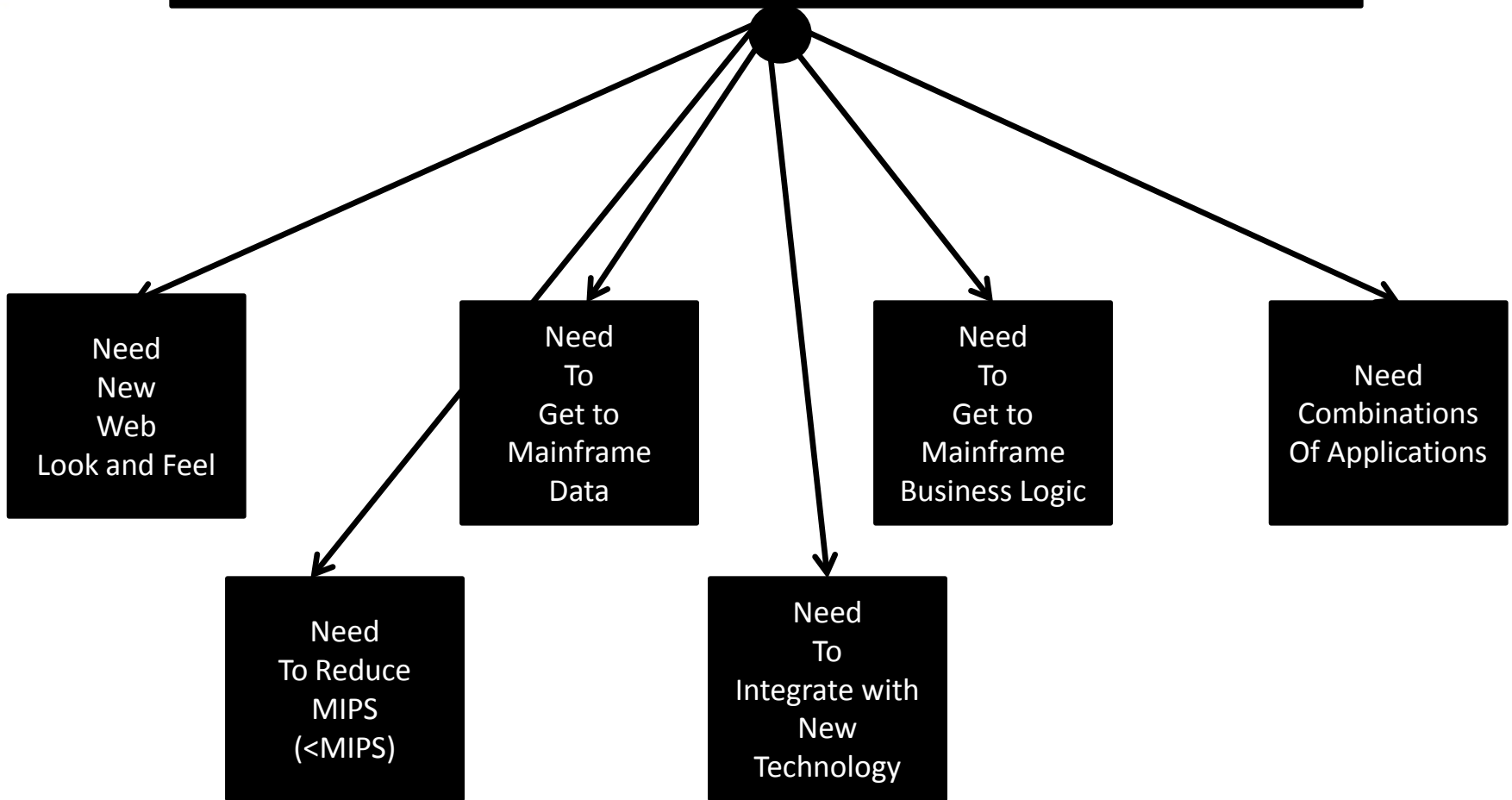


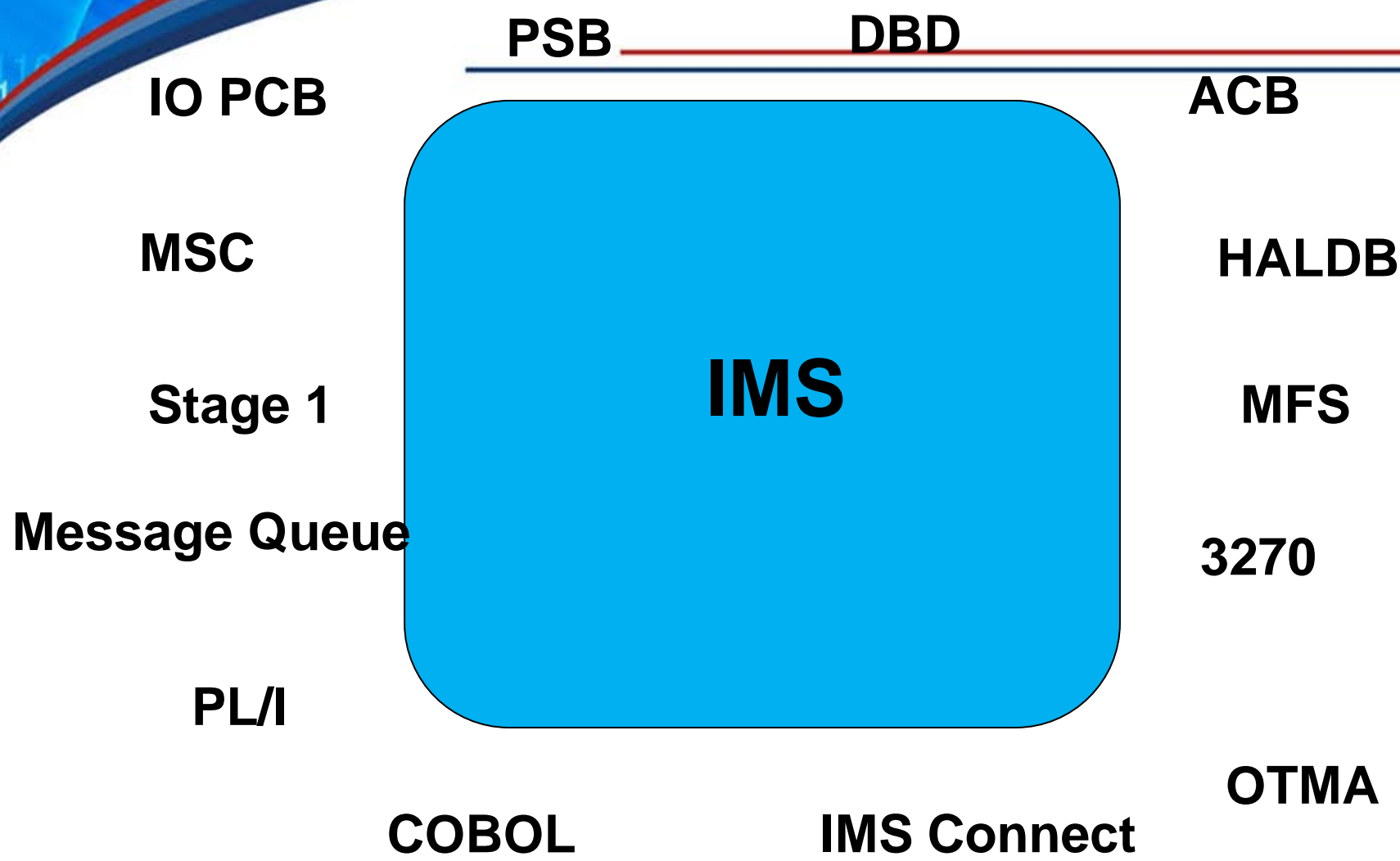


# GOT IMS?



# GOT IMS?







**AJAX**

**SSL**

**REST**

**Web 2.0**

**BPMN**

**POJO**

**.NET**

**SAP**

**BPMS**

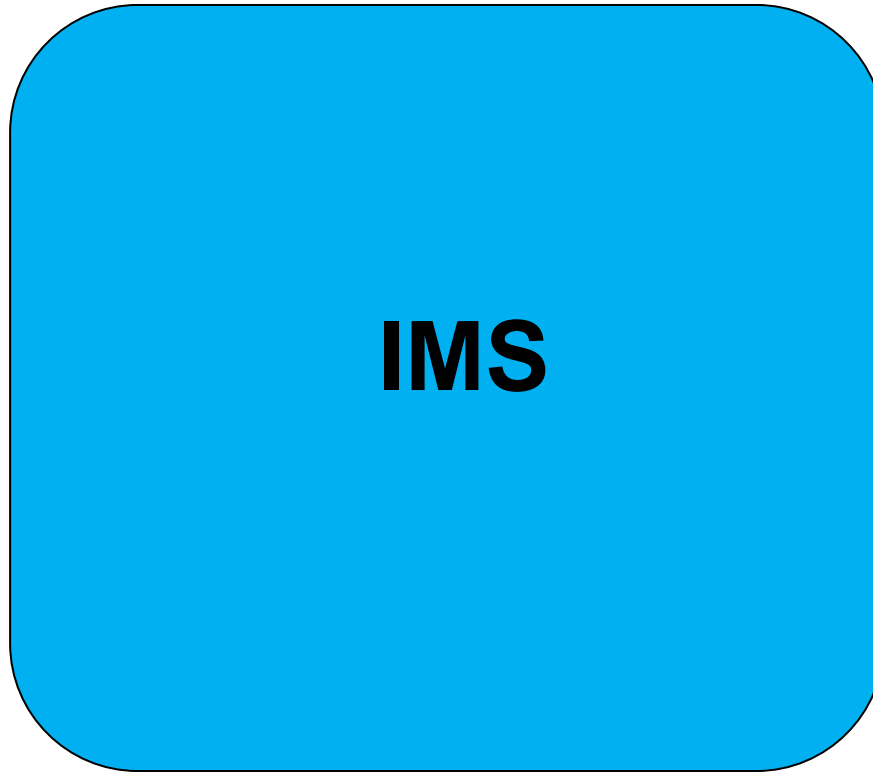
**Sharepoint**

**PHP**

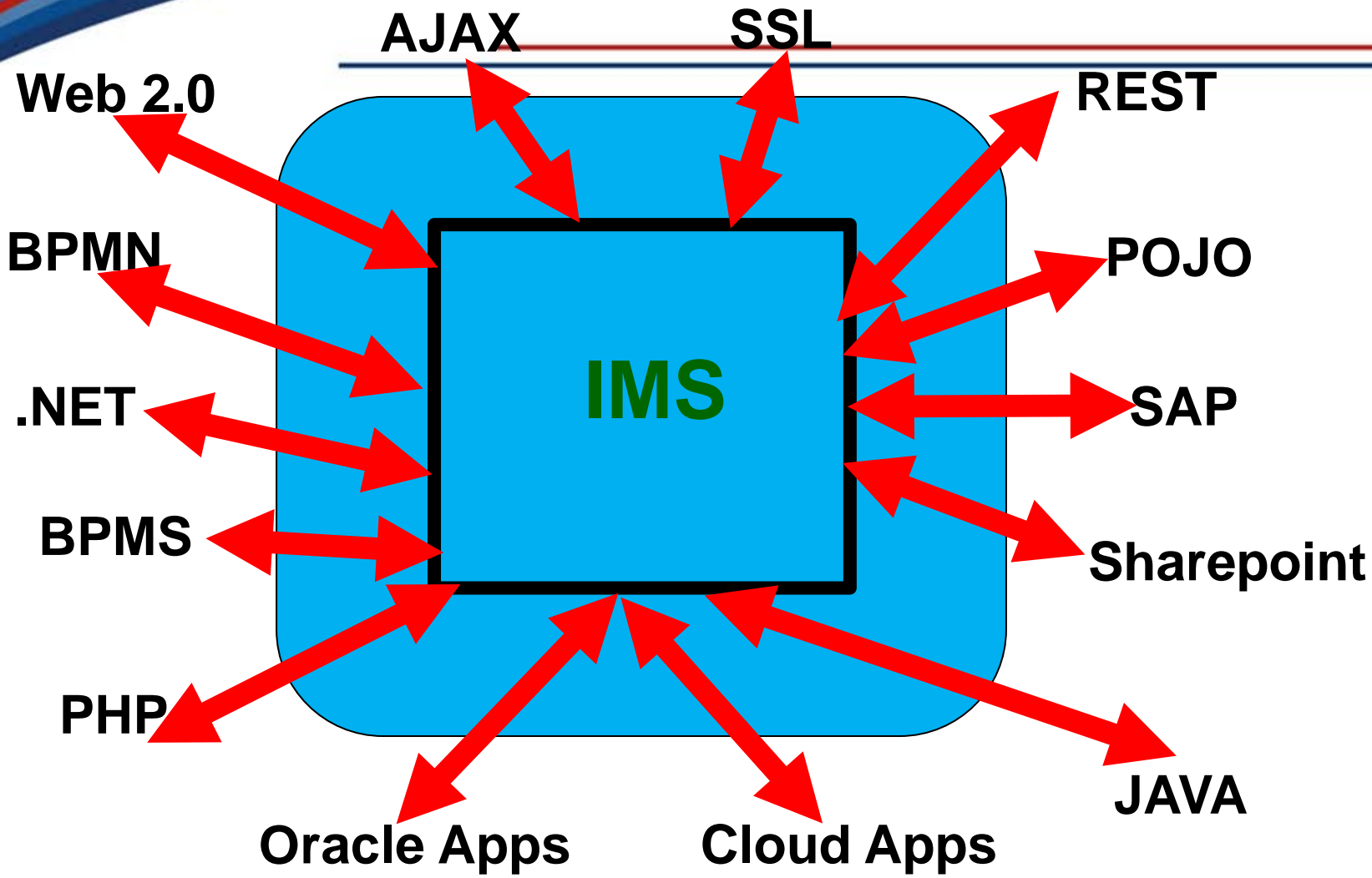
**Oracle Apps**

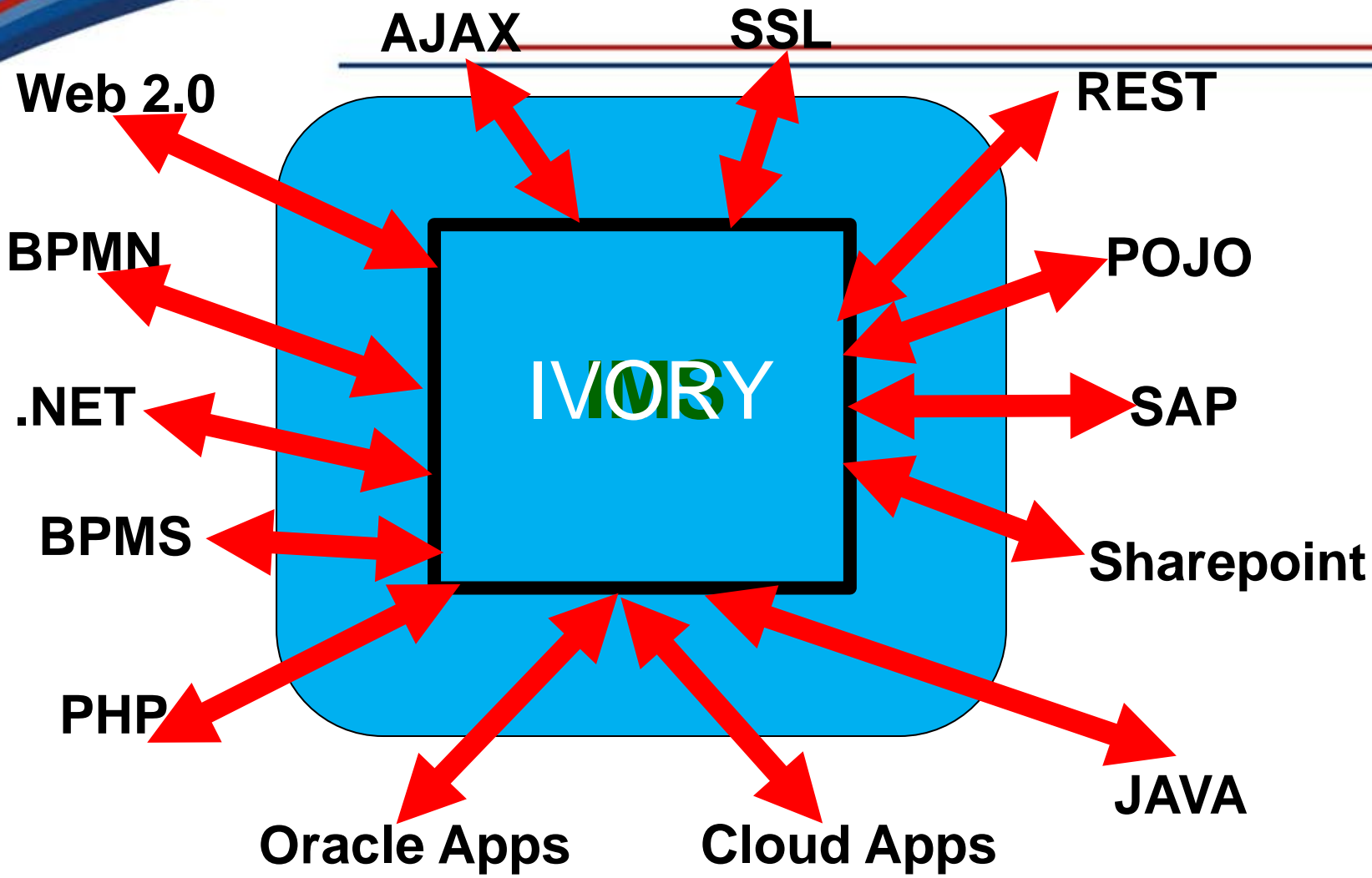
**Cloud Apps**

**JAVA**

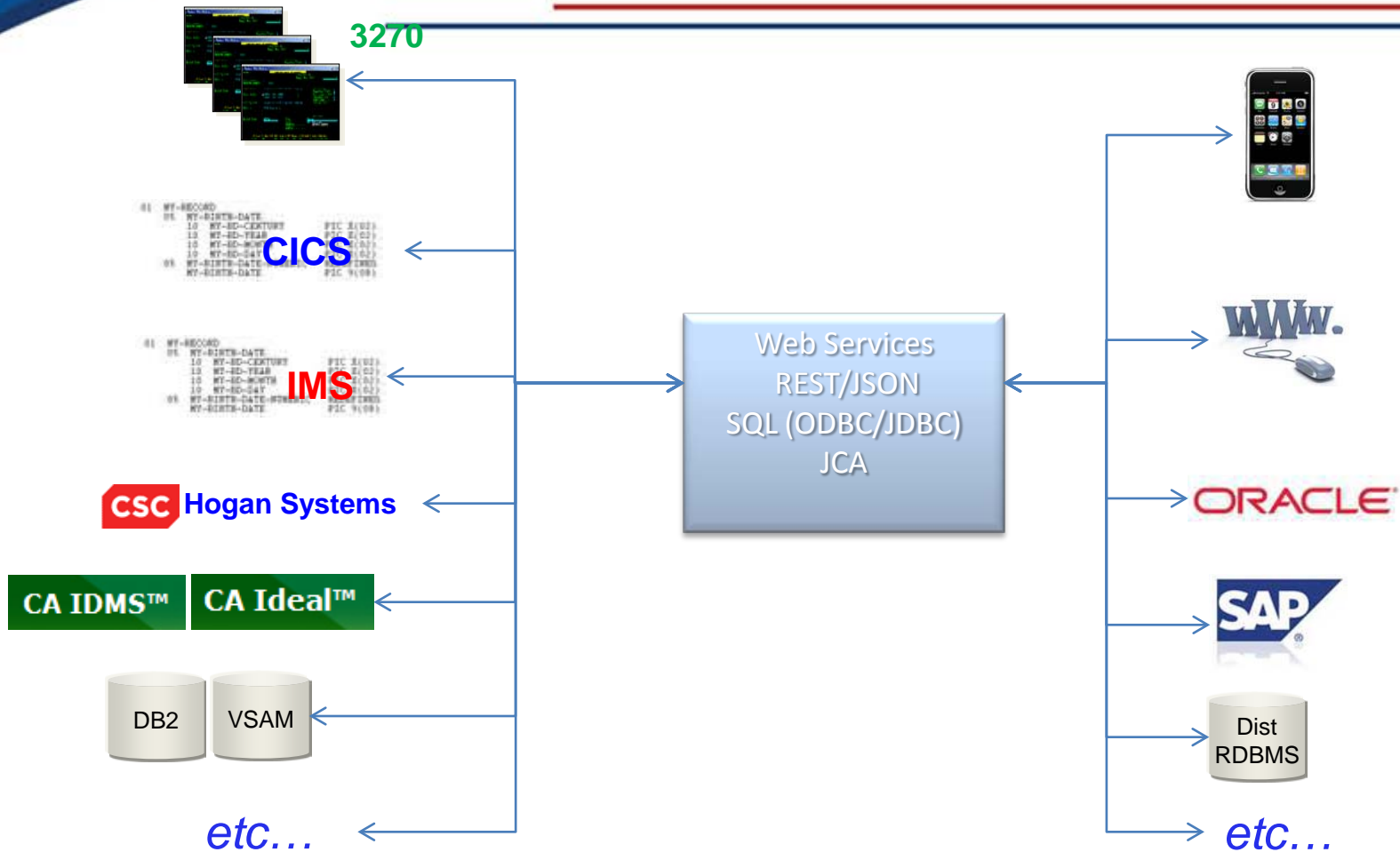


**IMS**

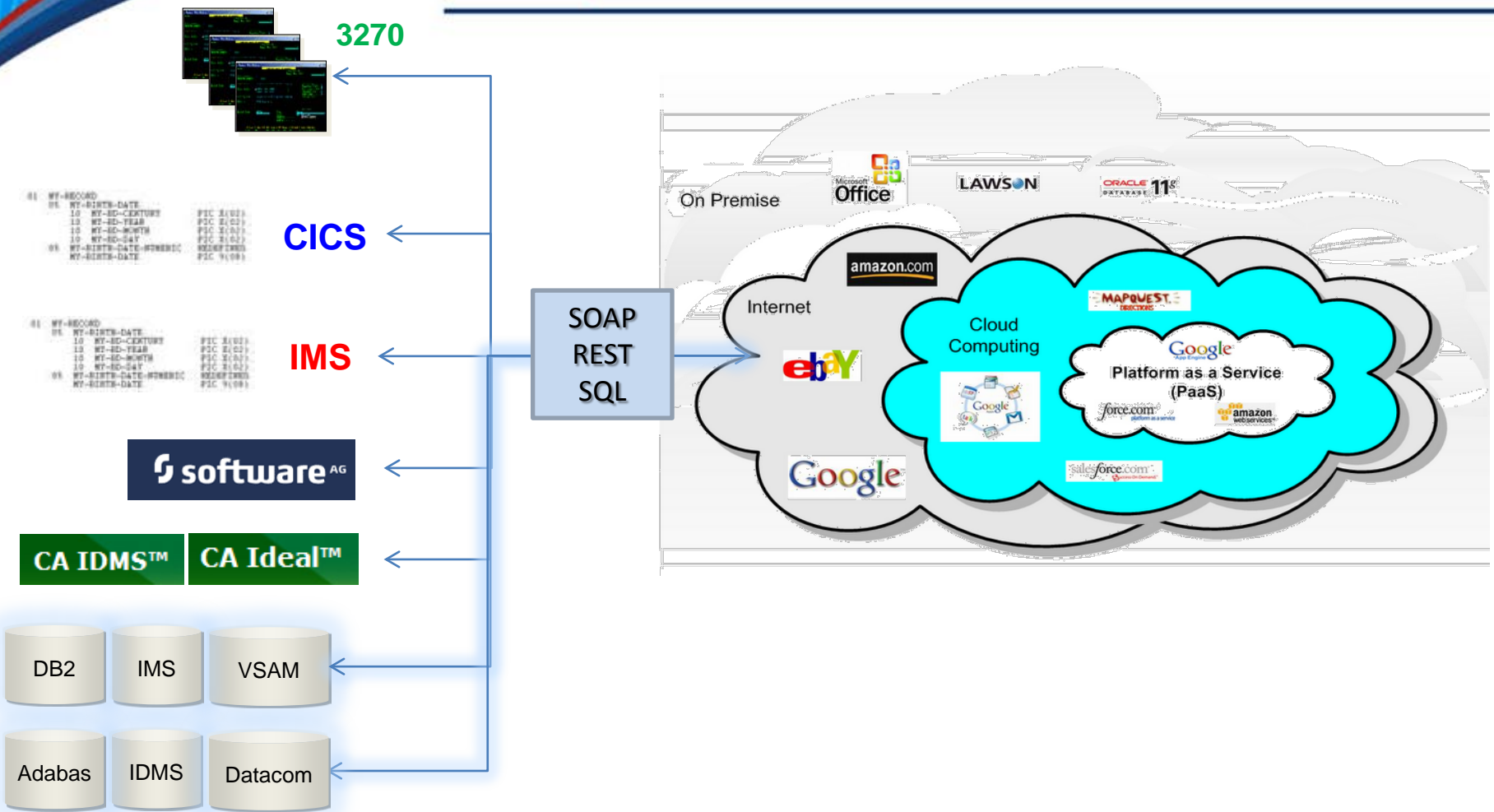




# Mainframe Integration Issues and Opportunities



# Cloud to Mainframe Integration





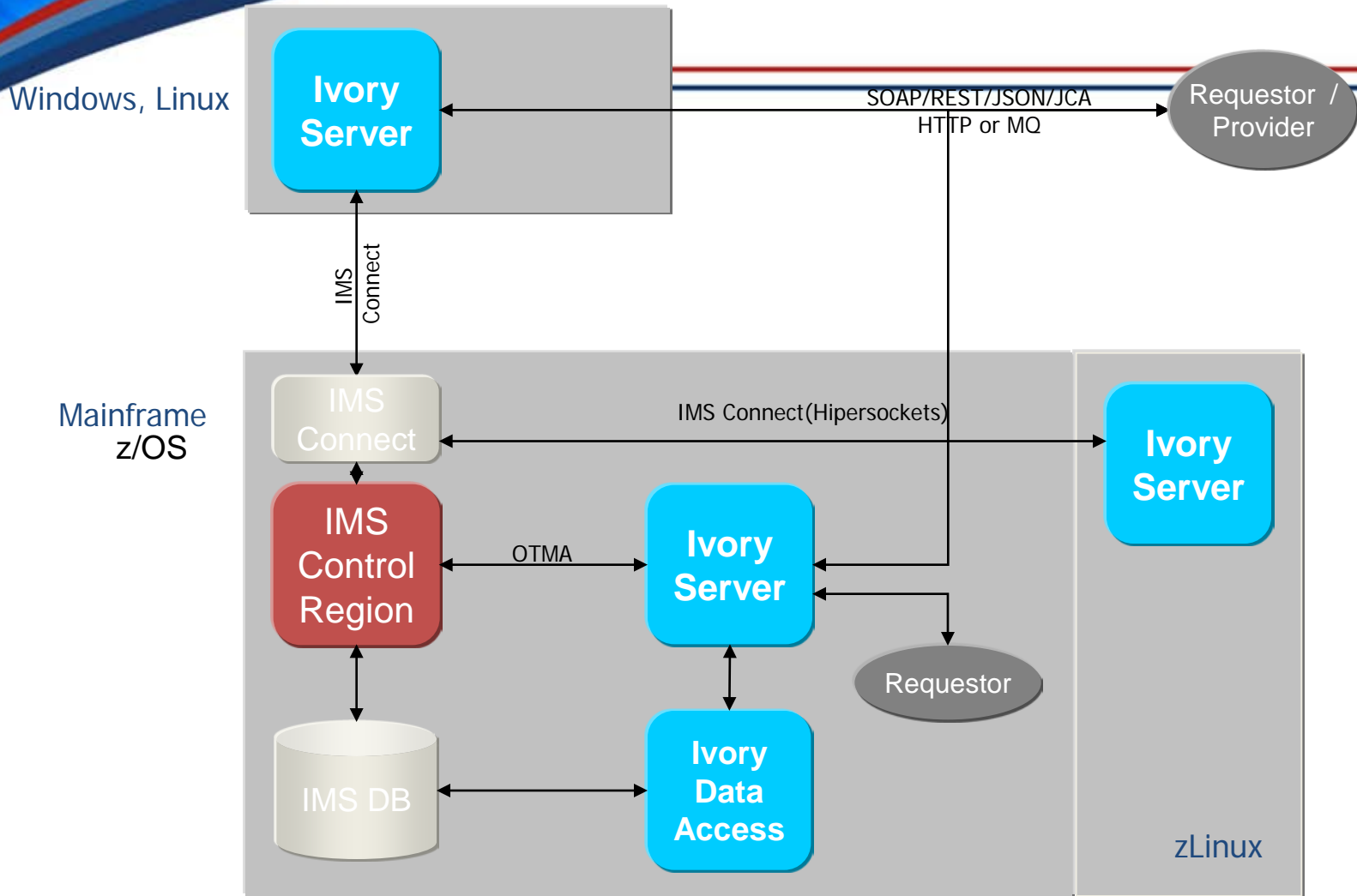


# New Development Paradigm

---

- Integrated drag and drop graphical environment( No coding)
- One Tool no other pre-reqs.  
**WSDL-First design**
- Design once, deploy many:
  - Started Task (OTMA)
  - CICS
  - Linux for SystemZ
  - 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 software?
- Can I get IMS transactions easily incorporated into the new software?
- 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?



**Easy !**

---

I need to have IMS data in a new spreadsheet.....

- IDA demo



**Easy !**

---

I need to have IMS transactions in a new software.....

- ISA demo

# 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>
    <outFirstName>MARY</outFirstName>
    <outExtension>265</outExtension>
    <outZipCode>30022</outZipCode>
  </outDataType>
</getinfoResponse>
```

SOAP

REST

IBM Mashup Center - Windows Internet Explorer

https://localhost:9443/mashuphub/client/layout/layout.html

File Edit View Favorites Tools Help

NETGEAR ProSafe™ - Welc... Google Suggested Sites

Internet Explorer cannot dis... Integrated Solutions Console IBM Mashup Center

IBM Mashup Center drivers | Settings | Logout | Help

Home: Catalog REST Service 39

### REST Service 39

https://drivers3.gtsoftware.com:9443/mashuphub/client/plugin/generate/entryid/39/plu...  
RESTRequest=get&ims1=ims1&inCommand=display&inLastName=rivers&parameter0=&soa...

**Rest String** ←

#### Details

<b>Permalink:</b>	http://drivers3.gtsoftware.com:9080/mashuphub/public/permalink?entryid=39		
<b>Source:</b>	REST Service	<b>Creator:</b>	drivers
<b>Version:</b>	1.0	<b>Average Rating:</b>	★★★★★ by 0 user(s)
<b>Documentation:</b>	None	<b>My Rating:</b>	★★★★★ Specify rating component 0 stars
<b>Times Accessed:</b>	2	<b>Categories:</b>	None
<b>Last Updated:</b>	2/1/11 4:10 PM	<b>Related Entries:</b>	None
<b>MIME Type:</b>	application/atom+xml	<b>Active Content Filtering:</b>	Disabled
<b>Saved:</b>	Yes	<b>Tags:</b>	
<b>My Permissions:</b>	View , Edit	<b>My Tags:</b>	<input type="text"/> <input type="button" value="Submit"/>
<b>Depends On:</b>	None	<b>Provides For:</b>	None

#### Comments

There are no comments.

#### Add a Comment

Required fields marked with \*

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Local intranet 100%

#### Actions

- Invoke REST Service
- View REST Service description
- Add to Remote Catalog
- Add Favorite
- Usage Statistics
- Edit Details
- Edit REST Service
- Delete

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



IBM Mashup Center - Windows Internet Explorer

https://localhost:9443/mashuphub/client/layout/layout.html

File Edit View Favorites Tools Help

NETGEAR ProSafe™ - Welc... Google Suggested Sites

Internet Explorer cannot dis... Integrated Solutions Console IBM Mashup Center

IBM Mashup Center drivers | Settings | Logout | Help

Home: Catalog REST Service 39 Parameters

### REST Service Invoker

\* soap:

\* ims1:

\* RESTRequest:

\* inCommand:

\* inLastName:

parameter0:

Invoke

Input Values

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Done Local intranet 100%

IBM Mashup Hub(InfoSphere MashupHub) , REST Service Invoker



https://drivers3.gtsoftware.com:9443/mashuphub/client/plugin/generate/entryid/39/pluginid/24?soa... 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%

Name	Type
<b>Lists</b>	
Announcements	Lists
Calendar	Lists
Links	Lists
Tasks	Lists
Team Discussion	Lists
<b>Document Libraries</b>	
Customized Reports	Document Libraries
Document Library	Document Libraries
dustyIDA	Document Libraries
Form Templates	Document Libraries
Shared Documents	Document Libraries
Site Assets	Document Libraries
Site Pages	Document Libraries
Style Library	Document Libraries
testIDAfrom INP2010	Document Libraries
<b>SOAP Services</b>	
acctlkup From Ivory Server(dusty)	SOAP Services
AcctMain on gtzdev.gtsoftware.com:20080	SOAP Services
IVORY CICS ACCT	SOAP Services
<b>RSS, REST, Server Scripts</b>	
dase on gtzdev.gtsoftware.com:20990	RSS, REST, Server Scripts
<b>XML Files</b>	
dustyform.xml	XML Files

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 OF 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	Guinness Ale	18	16	1	24 - 12 oz-Boxes	20

IMS data (via ODBC) in a Microsoft Excel Spreadsheet



# Ivory and BPMN(ActiveVOS)

The screenshot displays the ActiveVOS Designer interface for editing a Business Process Model and Notation (BPMN) process. The main canvas shows a process flow starting with a 'Receive' event, followed by 'Lookup Customer Data' and 'Approve Credit Increase' tasks. An 'If' gateway splits the flow into 'If Condition' (leading to 'Update Customer Credit Limit') and 'Else' (leading to an empty circle). The interface includes a Project Explorer on the left, a Palette on the right, an Outline at the bottom left, and a Properties panel at the bottom right.

**Process Activities**

Process Name:	CreditIncreaseRequest
Documentation	Target Namespace: http://CreditIncreaseRequest
All	

Systems on the mainframe



## 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

- 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



## 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 SAP, Oracle, Sharepoint etc)



## IMS and Outbound (WSDL – First )

---

- Must be able to Import WSDL and map correctly
- Must be able to generate correct PL/1 and COBOL from WSDL
- Must be able to easily build usable services





## Real World:

- Bank (Banking Application)
- Insurance (Mobile Insurance Application for agents)
- Manufacturing (Automobile Engineering)

# Deploying to Linux on System Z

The screenshot displays the GT Software Ivory Studio interface for a project named 'imsIvory (Web Service)'. The main workspace shows a complex flowchart titled 'Diagram - imsvory' for 'IMS Transaction Processing'. The flowchart starts with a 'Start' node and branches into several paths. Key components include:

- Web Service Operations:** Multiple 'Web Service Operation' nodes (e.g., 'Update', 'Delete', 'Create') that trigger 'IMS Point Nodes'.
- IMS Point Nodes:** These nodes define transaction scopes and control regions. They lead to 'Add IMS' or 'Move to IMS' nodes.
- IMS Modules:** 'IMS Module 1' through 'IMS Module 5' are used to execute specific IMS transactions.
- Decision Points:** 'Decision' nodes (circles with question marks) handle conditional logic based on 'IMS' status or 'Update' results.
- Output and Error Handling:** 'Move to Output' nodes lead to 'Operation End' nodes, which can be 'End Update', 'End Delete', 'End Create', or 'Fault Update'. 'Move to Work Variable' nodes are used for data manipulation and storage.

Annotations in the diagram include:

- A yellow box: "IMS Transaction Processing. This sample Web Service will process the JTCU sample transaction via the JTCUA services of Ivory. The IMS/DC application provides a name address system and the Web Service will support 4 of the commands allowed: Read (Display), Add, Update and Delete and the operations succeed."
- Another yellow box: "The IMS Point nodes define the transaction to access and optionally the IMS control region."
- A third yellow box: "The IMS nodes are very much like the JTCU Link nodes. Each set of nodes provide a setup (Point) a movement and execution. Any of the JTCU Link or Web Service nodes can be used along with the IMS nodes."

The left sidebar shows the 'Properties' panel with sections for 'Base', 'Advanced', 'OTMA', and 'IMS Connect'. The 'IMS Connect' section is highlighted, showing configuration for 'Tom's VPN' and 'Tom's z/os server'. The status bar at the bottom indicates 'Ready' and '67%' zoom.

Deploying Project to Ivory Server on System Z

# Ivory uses the zIIP

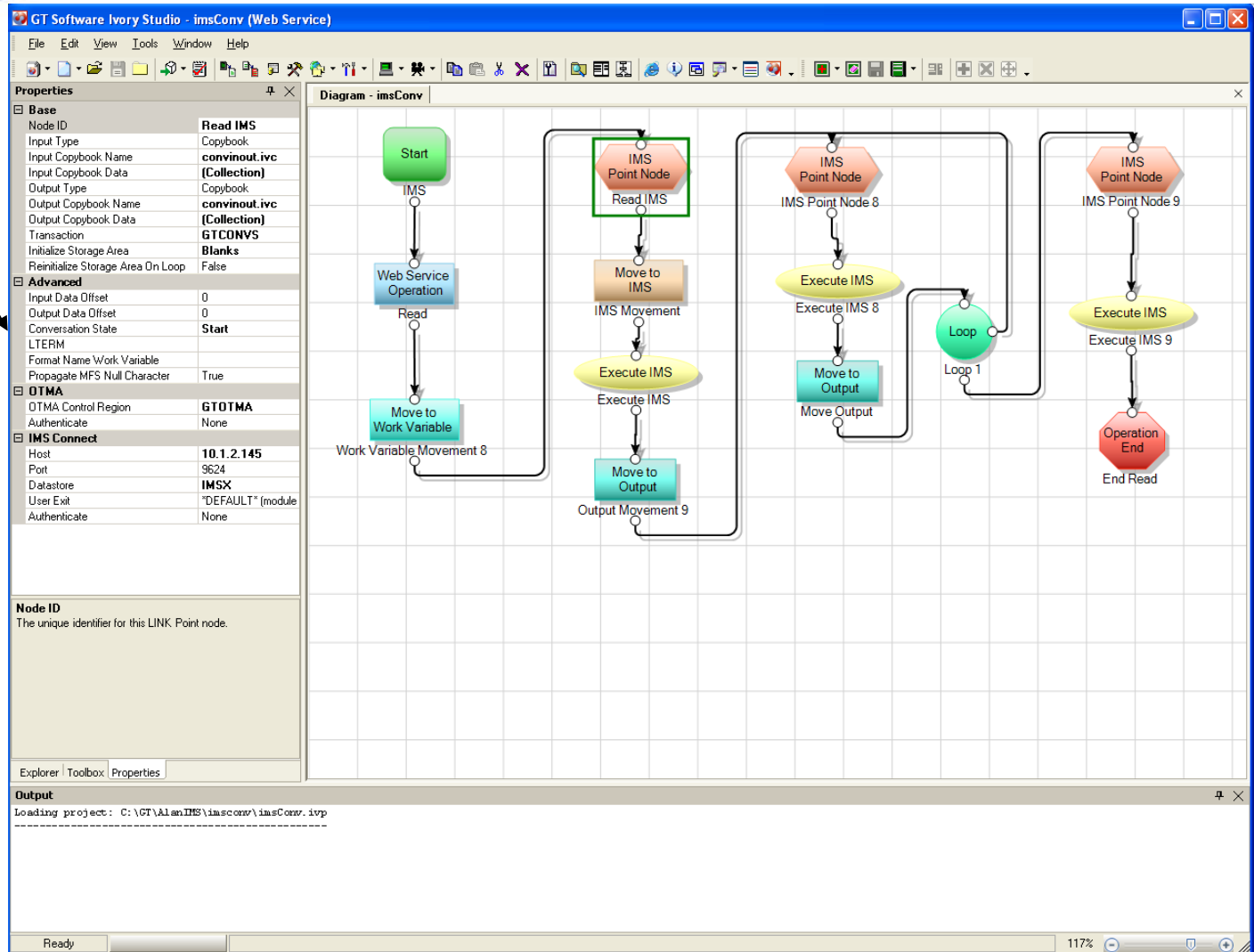
The screenshot displays the GT Software Ivory Studio interface for a web service named 'AccountProfile3270'. The 'Properties' window on the left shows the 'Advanced' section with 'zIIP Eligible' set to 'True', highlighted by a blue arrow. The 'Diagram - AccountProfile3270' window on the right shows a flowchart with two parallel paths. The left path starts with a 'Move to Output' node (MoveInfo-1), followed by a '3270 Action' (Clear-I-1), a '3270 Point Node' (End-1), and another '3270 Action' (Clear-End-1). The right path starts with a 'Move to Output' node (MoveError-2), followed by a '3270 Action' (Clear-E-2). Both paths converge at the bottom.

Properties	
<b>Base</b>	
Node ID	MoveInfo-1
SOAP Output Data Movements	(Collection)
SOAP Header Output Data Movements	(Collection)
<b>Advanced</b>	
zIIP Eligible	True

**zIIP Eligible**  
Indicates whether the execution of this node is eligible to be executed on a zIIP specialty engine. This only applies to an Ivory Server system which ha...

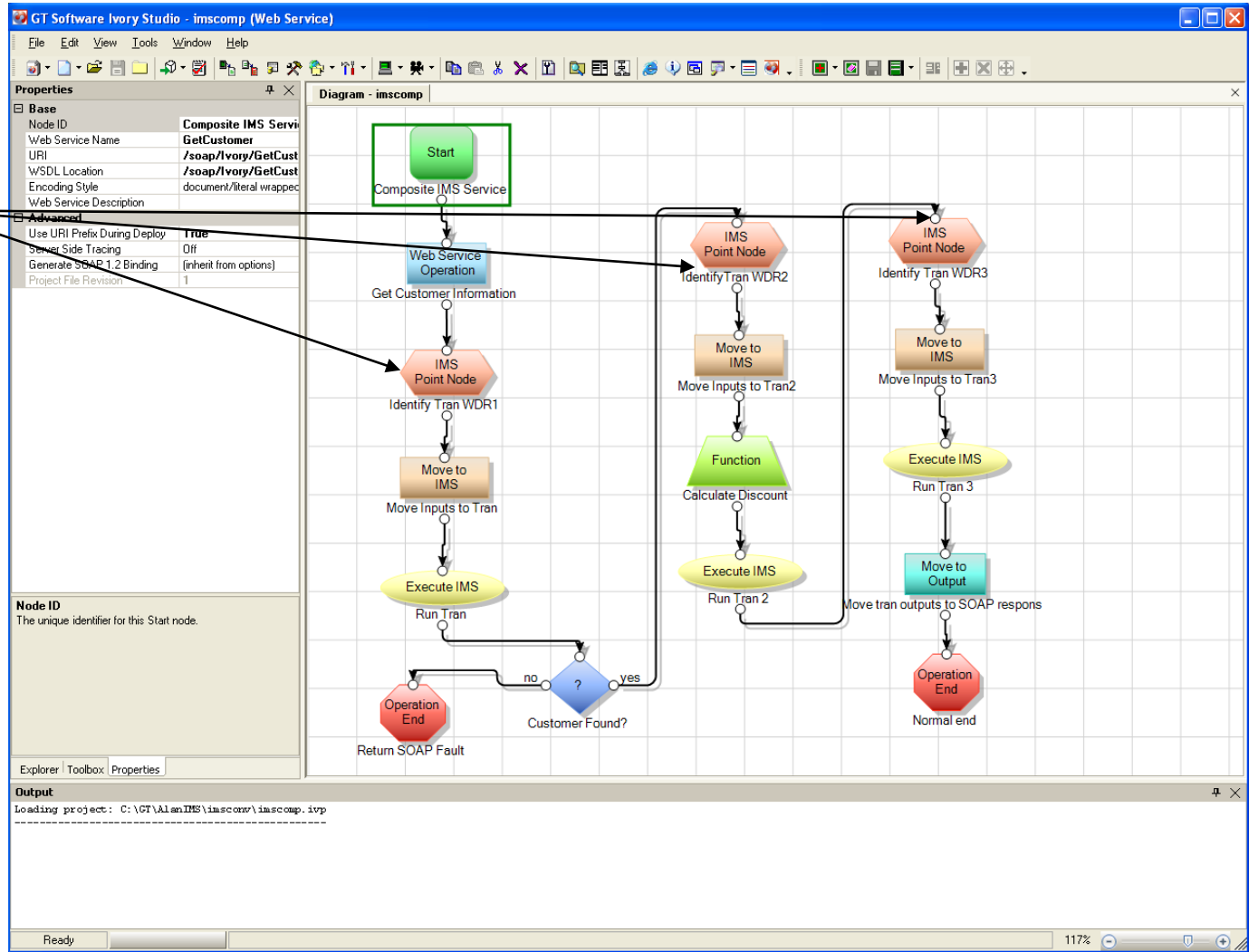
# IMS Conversational as Service

Conversation State

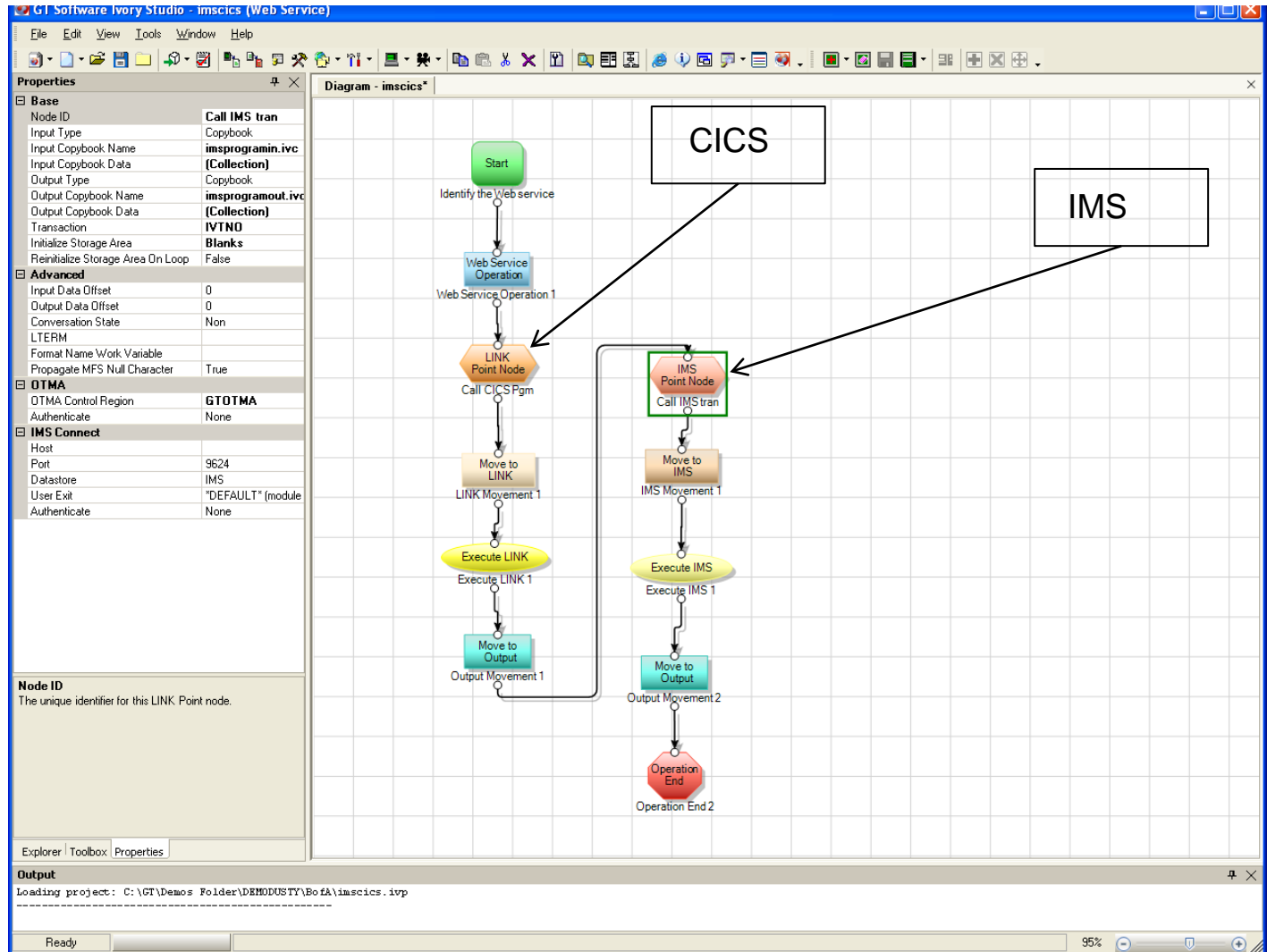


# IMS Composite as Service

Multiple  
IMS  
Transactions



# IMS & CICS in the same Service



# Custom code, MQ and IMS

GI Software Ivory Studio - delegatIMS (Web Service)

File Edit View Tools Window Help

Properties

<b>Base</b>	
Node ID	IMS Point Node 2
Input Type	Copybook
Input Copybook Name	imsprogramin.ivc
Input Copybook Data	(Collection)
Output Type	Copybook
Output Copybook Name	imsprogramout.ivc
Output Copybook Data	(Collection)
Transaction	IVTNO
Initialize Storage Area	Low Values
Reinitialize Storage Area On Loop	False
<b>Advanced</b>	
Input Data Offset	0
Output Data Offset	0
Conversation State	Non
LTERM	
Format Name Work Variable	
Propagate MFS Null Character	True
<b>OTMA</b>	
OTMA Control Region	GTOTMA
Authenticate	None
<b>IMS Connect</b>	
Host	
Port	9624
Datastore	IMS
User Exit	"DEFAULT" (module G
Authenticate	None

Node ID  
The unique identifier for this LINK Point node.

Explorer | Toolbox | Properties

Output

Error parsing COBOL project file Could not find file 'C:\CT\Demos Folder\MSstuff\imsprogramout.ivc'.

Ready

56%

Diagram - delegatIMS\*

The diagram illustrates a process flow for the delegatIMS service. It begins with a 'Start' node, followed by an 'Identify the Web service' step. The process then branches into three parallel paths, each starting with a 'Web Service Operation' node. Each path proceeds through a 'Delete Data' node, a 'Move to Delete' node, and an 'Execute Delete' node. The paths then converge at a 'Switch' node, which branches into three 'Case' nodes. The 'Case' nodes lead to 'Move to Output' nodes, which then connect to 'Operation End' nodes. The process also includes a 'GET MQ MESSAGE QUIT' node, a 'TRUNCATED MESSAGE?' node, and a 'Verify IMS' node. The flowchart concludes with 'Operation End' nodes and 'IMS MESSAGE?' nodes. A yellow callout box indicates: 'Extract commands and parameters from IMSChannel message before invoking IVTNO IMS transaction.'

# IMS Calling external services

The screenshot displays the GT Software Ivory Studio interface for a Callable Service Operation named 'calltest'. The left pane shows the Properties window with the following details:

- Base**
  - Node ID: Callable Service Operation 1
  - Callable Service Operation: HRTIBMPOC
  - Generated Source Name: HRT00
  - Callable Inputs: (Collection)
  - Callable Outputs: (Collection)
  - Work Variables: (Collection)
  - BLOBs: (Collection)
  - Description:
- Reference WSDL**
  - WSDL Location: file:///C:/GT%20POCS/V&M/HRT\_IBM\_POC\_Original
  - Reference Web Service: HRT\_IBM\_POCSERVICE
  - Reference Web Service Port: HRT\_IBM\_POCSERVICE
  - Reference Web Service Operation: HRT\_IBM\_POCSERVICE
- Advanced**
  - Request Storage Type: COMMAREA
  - Response Storage Type: COMMAREA
  - Error Storage Type: TD Queue
  - Error Storage Name: GWAO

The right pane shows the Diagram - calltest, which is a flowchart illustrating the sequence of operations:

- Start (Green rounded rectangle)
- Identify the Callable service (Text label)
- Callable Service Operation (Blue rounded rectangle, labeled Callable Service Operation 1)
- Web Service Client Point Node (Yellow diamond, labeled Web Service Client Point Node 1)
- Move to Web Service Client (Brown rounded rectangle, labeled Web Service Client Movement 1)
- Execute Web Service Client (Yellow oval, labeled Execute Web Service Client 1)
- Move to Output (Light blue rounded rectangle, labeled Output Movement 1)
- Operation End (Red rounded rectangle, labeled Operation End 1)

The bottom status bar shows 'Ready' and '100%' zoom level. The output pane at the bottom indicates the project path: 'Loading project: C:\GT\_POCS\VA&M\Ivory Projects\callable\calltest.ivp'.





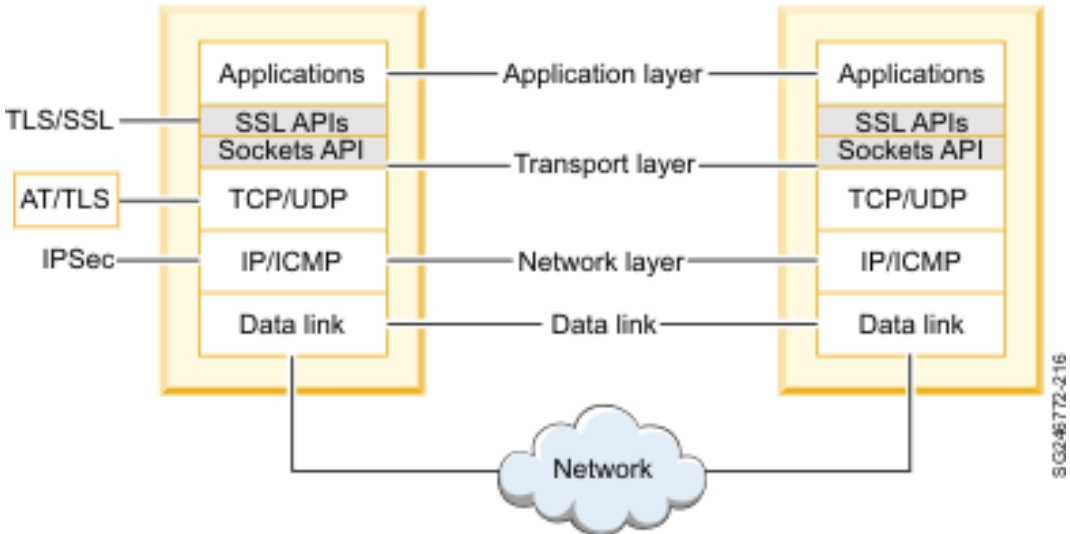
## IMS Calling external services

---

- 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

# Security

❖ Use AT-TLS(Application Transparent Transport Level Security)





**IMS**

