Slide 1

Mobile Services Framework

Enabling Rapid Creation of Innovative Mobile Services via SOA-based, Carrier Grade Motorola Framework

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Slide 2

Mobile Services Framework
Goal Of This Talk

To understand what are "Seamless Data Services" and how a Service Delivery Platform (SDP) along with a Service Oriented development framework enables them.

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Mobile Services Framework
Agenda

- **Value Proposition**
- **Search For The Killer Data Application**
- **Service Delivery Platform**
- **Developer Program**
- **Framework for Rapid Application Development**
- **Demo**
- **Conclusions**
- **Future Work**
- **Q&A**

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Mobile Services Framework
Value Proposition

Sophisticated data services will be needed to grow mobile data's ARPU impact as messaging nears saturation

	2002	2005
Total ARPU / Data Mix	$32.00 (Voice 90.0%, Data 10.0%)	$33.90 (Voice 78.5%, Data 21.5%)
Messaging	90%	63%
Multi-Media	5%	27%
Basic Web	5%	10%

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Search For The Killer Data Application – An Elusive Goal

Need "Killer" Service Enabling Environment

Rapid service creation process	Flexible architecture to launch, provision & manage	Adaptation & management of new business models	Leverage suite of applications
Deliver a dynamic portfolio of content rich, personalized services with standard creation tools	Manage & control costs, improve time to market, scaling that gains acceptance and retiring less popular services	Allow for forging and managing flexible business relations and partnerships	Provide the flexibility to use/launch from a suite of apps in place via hosted or MVNO model

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Introducing …
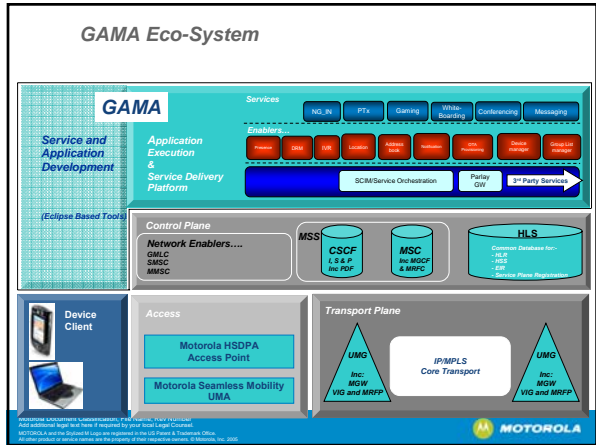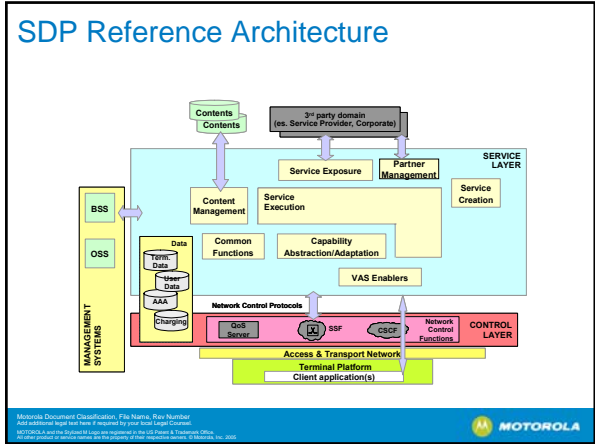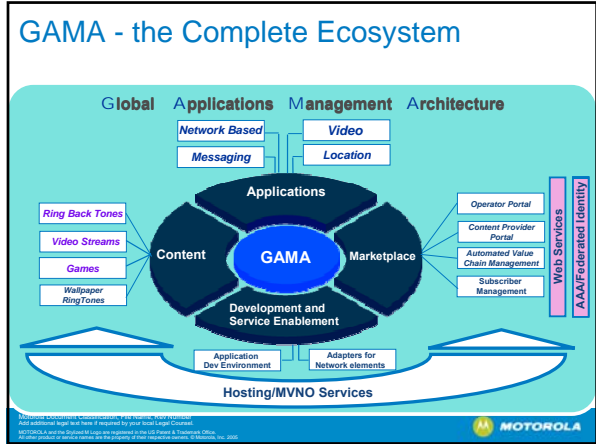

Global Applications Management Architecture
Delivers interoperability among different applications and services available to enhance end-user experience with personalization

Delivers consistent user identity, single sign-on experience across all the authenticated applications

Automated participant governance and enables efficient supply chain between the various partners involved in delivery and management of applications

Web Services
Identity & Policy Mgmt
GAMA
Value Chain Mgmt
Service Enablement

Application creation and integration by leveraging existing network assets (messaging, location, video streaming, presence, etc.)

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GAMA - the Complete Ecosystem

Global Applications Management Architecture

Network Based
Video
Messaging
Location

Applications

Ring Back Tones
Video Streams
Games
Wallpaper RingTones

Content
GAMA
Marketplace

Operator Portal
Content Provider Portal
Automated Value Chain Management
Subscriber Management

Web Services

AAA/Federated Identity

Development and Service Enablement

Application Dev Environment
Adapters for Network elements

Hosting/MVNO Services

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SDP Reference Architecture

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GAMA Eco-System

GAMA

Service and Application Development

(Eclipse Based Tools)

Application Execution & Service Delivery Platform

Services: NG_IN, PTx, Gaming, White-Boarding, Conferencing, Messaging

Enablers...

SCIM/Service Orchestration
Parlay GW
3rd Party Services

Control Plane
Network Enablers....
GMLC
SMSC
MMSC

MSS
CSCF L,S & P Inc PDF
MSC Inc MGCF & MRFC
HLS
Common Database for:- NLR - HS2 - EIR - Service Plane Registration

Device Client

Access
Motorola HSDPA Access Point
Motorola Seamless Mobility UMA

Transport Plane
UMG Inc: MGW VIG and MRFP
IP/MPLS Core Transport
UMG Inc: MGW VIG and MRFP

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GAMA Application Development Paradigm

Rapid application development based on pre-defined framework – GAMA Application Framework (GAMA-AF)

Leverages the GAMA platform

Enables Service provider's own IT team to experiment and deploy newer mobile applications

- No telecom knowledge required
- Based on Java/Open source technologies
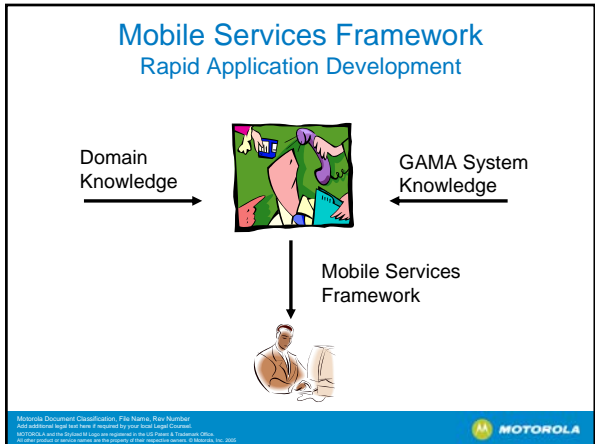
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Background of GAMA-AF

There are about 3.5 million Java developers worldwide but only a handful of mobile application developers

Companies have tried to build GUI based mobile ADEs

- Works for simple applications
- Hard to represent business requirements graphically
- Can not generate 'tight-code' in most cases

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Mobile Services Framework
Rapid Application Development

Domain Knowledge

GAMA System Knowledge

Mobile Services Framework
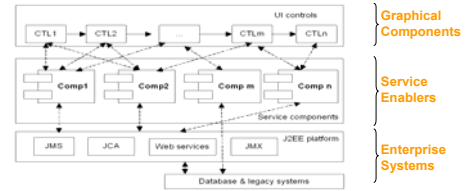
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Mobile Services Framework
Rapid Application Development

- **Design Goals: Need More than a SDK that**
  - Requires minimal telecom domain knowledge
  - Requires minimal coding
  - Requires minimal configuration
  - Simplifies testing & deployment
  - Uses a Lightweight API
  - Provides IDE Integration

Mobile Services Framework
Architecture

- **Service Enablers**
- **Design Templates**
- **Eclipse IDE Integration**
- **Lightweight API**

Mobile Services Framework
Service Enablers

- **Pre-packaged service components**
  - **Text-to-speech**
  - **Speech-to-text**
  - **Web Services**
  - **Location Components**
  - **Presence Components**

Mobile Services Framework
Design Templates

- **Abstraction of domain specific services**
  - **Message Roundtrip**
  - **Message Transformation**
  - **Message Broadcast**
  - **Reminder Message**
  - **Message Re-route**

Mobile Services Framework
Eclipse Integration

- Eclipse & Web Tools Platform based Plug-in for
  - Design
  - Development
  - Auto code generation
  - Test & Emulation
  - Packaging
  - Deployment
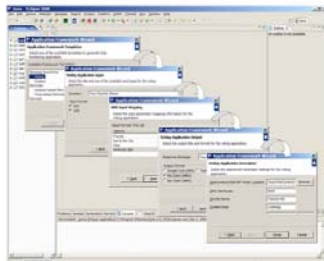
Fig 1: Component-based development environment

Mobile Services Framework
Behind the scenes….

- **Framework handles:**
  - **Application registration with a JMS based event layer**
  - **SMS/MMS message handling**
  - **Persistence**
  - **Application Authentication, Billing, & Provisioning**
  - **Identity Management**

Mobile Services Framework
Simple API

- Simple Framework Interface

```
public interface MessageProcessor
{
    public Object processMessage(MessageContent content,
    ServiceContext context)  throws Exception;
}
```

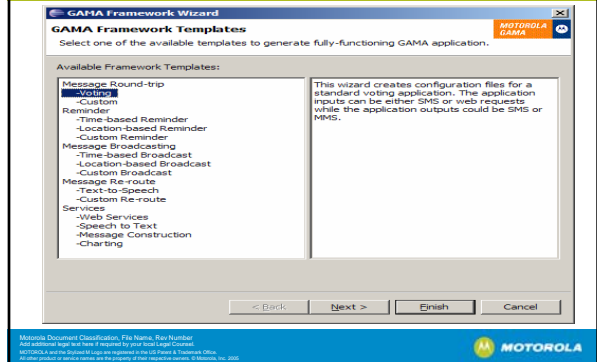## Mobile Services Framework
Simple API

- Framework callback includes MessageContent Object as one of following types:
  - SMSContent- Text content
  - MMSContent- Multimedia content
  - WebContent- MIME content

Message Roundtrip Scenario: Voting Application
1. Service Developer uses Framework Templates to create a new Voting Application.

Message Roundtrip Scenario: Voting Application
2. Template allows service customization by providing a variety of input (SMS, web) and output (SMS, MMS, web, etc.) formats.
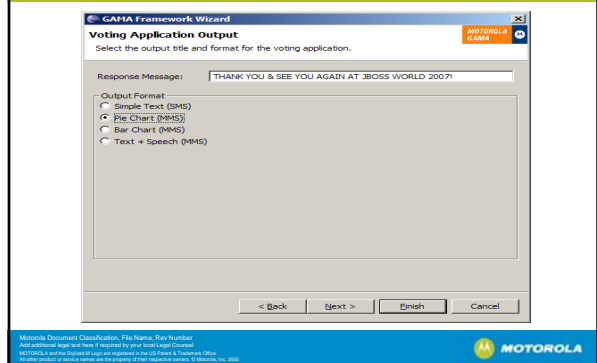
Message Roundtrip Scenario: Voting Application
3. Template allows service customization by providing a variety of input (SMS, web) and output (SMS, MMS, web, etc.) formats.

Message Roundtrip Scenario: Voting Application
4. Framework handles message processing (JMS queues), persistence, security, provisioning, & billing.
5. Service developer can deploy the new Voting Application on the Service Delivery Platform.
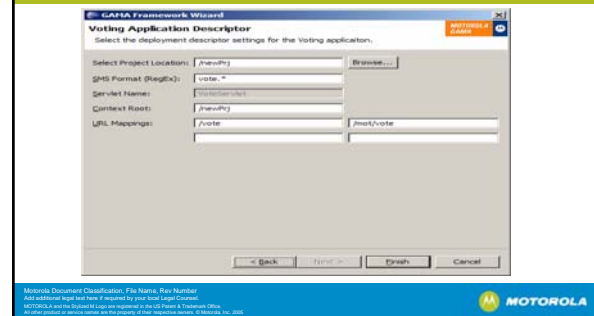
Message Roundtrip Scenario: Voting Application

6. Subscribers can vote by sending SMS and get the voting results as MMS.

GAMA
(Service Delivery Platform)

Cellular Network

Voting

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Fig. 4: Sample mobile application

Mobile Services Framework
Conclusion

- **Design Goals Revisited:**
  - Requires minimal telecom domain knowledge √
  - Requires minimal coding √
  - Requires minimal configuration √
  - Simplifies testing & deployment √
  - Uses a Lightweight API √
  - Provides IDE Integration √

  Application in Minutes

Mobile Services Framework
Conclusions

- **Framework Strengths**
  - Service Oriented Architecture
  - Eclipse IDE/ Web Tools Platform Integration
  - POJO based persistence model

- **Limitations**
  - Graphical composition of services
  - Limits of service templates

Mobile Services Framework
Future Work

- **Component-based Workflow Management using JBoss jPBM**
- **Service Orchestration**
- **Client Side Development**
- **Domain specific language/s**
- **Domain specific notations**

Mobile Services Framework
Q&A

?