The Utility of Compound Wireless Services*

Presented by –
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* The ideas presented are protected by a patent application.
The Utility of Compound Wireless Services

Outline:

1. Introduction & background
2. Some terminology
3. Service categories
4. Examples
5. Build facilities & example
6. Conclusion
1. Introduction & background

1.1. Programming Compound Wireless (Mobile Communication) Services (CWSs)

1.2. The wireless roller coaster ride
   1.2.1. Data investment
   1.2.2. Voice still the “killer ap”

1.3. Broadway show

1.4. Middletown, NJ
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2. Some terminology

2.1. What if I could create a sequence of services that includes –
   2.1.1. Location service - determines present location of a wireless terminal
   2.1.2. Traffic information retrieval - retrieves traffic information from state police and other sources for a specified region
   2.1.3. Travel route computation - computes the fastest route, based on constraints, between the present wireless terminal location and a designated destination (e.g., airport)

2.2. Fundamental wireless service
2.3. Compound wireless service
2.4. Wireless terminal (for telecommunications)
2.5. Message services (SMS &MMS)
### The Utility of Compound Wireless Services

#### 3. Service categories

<table>
<thead>
<tr>
<th>FUNDAMENTAL WIRELESS SERVICES</th>
<th>UTILITY SERVICES</th>
<th>COMPOUND WIRELESS SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Receive the location of a wireless terminal/telephone</td>
<td>1. Invoke a service</td>
<td>Compound Services</td>
</tr>
<tr>
<td>2. Send/receive a still picture</td>
<td>2. Stop compound service</td>
<td>Built by</td>
</tr>
<tr>
<td>3. Dial a recorded wireless terminal/telephone number</td>
<td>3. Determine if equality exists</td>
<td>Subscribers/Users</td>
</tr>
<tr>
<td>4. Send/receive a recorded message; i.e., image, textual, or audible, etc.</td>
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<td>5. Receive a traffic report for a region</td>
<td>5. Determine if greater than</td>
<td>Manufacturers/Suppliers</td>
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<td>6. Receive weather information for a region</td>
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<td>Made Available By</td>
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<td>7. Determine a best travel route according to selected criteria; i.e., fastest, shortest, etc.</td>
<td>7. Determination of an event</td>
<td>Third Party</td>
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<td>8. Receive departure/arrival information for one or more flights; i.e., delay, gate #, terminal Id, etc.</td>
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<td>Applications Providers</td>
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<td>9. Create a parameter</td>
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<td>10. Execute/invoke a service conditioned on a remote event</td>
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<td>11. Connect to a prescribed IP service provider</td>
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<td>12. Execute/invoke a transaction on the web; i.e., move to a web address, log into a web application, etc.</td>
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<td>13. Perform data base activities in a remote computer; i.e., send/receive/edit data to/from a permitted data base</td>
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4. Examples

4.1. Police tracking of stolen car compound wireless service (TrkStlnCar).

Conventions
Italicized => a variable
Bold Upright => a service
“Bold Upright” => “an understood constant”
(“In”, parentheses) => (dependent or independent parameters)
{In braces} => {Upright or italic commentary that the compiler ignores}

Initialized Parameters
1. WirelessTerminal# = {ID of wireless terminal in auto}
2. Password = {Authorization for Location service}
3. Time = {Delay to next Location measurement}
4. PolicePhone# = {Local police telephone number}
5. RecordedMessage1 = {Announcement that car stolen, and its at the Location Loc}
6. RecordedMessage2 = {Announcement that its Location will be displayed and to obtain future locations use the WirelessTerminal# and the Password that are displayed}

Invoke

Loc = Location (WirelessTerminal#, Password)

ParkedLoc = Loc

Ringer (“Off”)

Loc = Location (WirelessTerminal#, Password)

Is

ParkedLoc = Loc?

No

Yes

Dial (PolicePhone#)

Pause (Time)

Announce (RecordedMessage1, Loc, RecordedMessage2)

Display (Loc, WirelessTerminal#, Password)
4.2. Embellishments to TrkStlnCar CWS (EmbTrkStlnCar).

**Initialized Parameters**
1. `WirelessTerminal#` = {ID of wireless terminal in auto}
2. `Password` = {Authorization for Location service}
3. `Time` = {Delay to next Location measurement}
4. `PolicePhone#` = {Local police telephone number}
5. `RecordedMessage1` = {Announcement that car stolen and its Location follows}
6. `RecordedMessage2` = {Announcement to call following `WirelessTerminal#` and provide its `Password` to obtain future car Locations}
7. `Spouse'sWireless#` = {Spouse’s wireless terminal number}
8. `RecordedMessage3` = {Announcement of car’s present Location will be displayed}
9. `RecordedMessage4` = {Announcement that car is at its parked location signifying an error}
4.3. Reminder to stop tracking of stolen car CWS (StpTrkStlnCar).

**Initialized Parameters**

1. WirelessTerminal# = {ID of spouse’s wireless terminal to be taken after parking auto}
2. Password = {Authorization for Location service}
3. Time1 = {Delay to allow physical separation from car Location}
4. Time2 = {Delay to to next Location measurement}

```
Loc = Location (WirelessTerminal#, Password)

ParkedLoc = Loc

Pause (Time1)

Loc = Location (WirelessTerminal#, Password)

Is ParkedLoc = Loc ?

No
Pause (Time2)

Yes
Announce (“LoudRing”)

Display (“Stop the TRkStlnCar CWS”)
```
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4. Examples

4.4. Roaming charges CWS.

\[
\text{VoiceData (CalledTerminal#, StartTime, EndTime, CallDuration, Roaming, Charges)} = \text{VoiceCallData (CallingTerminal#, Password)}
\]

\[
\text{RoamDataBase = Store (VoiceData)}
\]

\[
\text{SpentRoam = PrevSpent + Charges}
\]

\[
\text{Display ("Roaming = ", SpentRoam)}
\]

\[
\text{PrevSpent = SpentRoam}
\]

Initialized Parameters:
1. \text{CallingTerminal#} = \{Wireless terminal # making the voice call\}
2. \text{Password} = \{Authorization for voice call data\}
3. \text{PrevSpent} = \{"0" at origination or when reset. Otherwise, the accumulated amount\}
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4. Examples

4.5. Business meeting departure CWS.

4.5. Business meeting departure CWS.

Invoke

\((\text{ArrvTime, Rte}) = \text{RouteAssist (WirelessTerminal\#, Password, Destination, AtAirport, Constrnts, Distance, Wait, MaxTime, DelayAhead)}\)

\(\text{GtTime} = \text{ArrvTime} + \text{AirportTime}\)

Is \(\text{GtTime} < \text{BoardTime}\)?

No

\(\text{AvailTime} = \text{BoardTime} - \text{GateTime}\)

Display (“Available time is: ”, AvailTime)

Pause (Wait)

Yes

Display (Rte)

Read (AltrntFlghts )

Display (“Missed flight:”, AlternateFlightTable)
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4. Examples

4.6.1. Wireless credit/debit card payment fundamental service (WrlssCrtCrd).

3rdPartyID = (EstablishmentID, Service#, . . .)  
PurchaseData = (VndrType, PurchaseTotal, Items, Prices, . . .)
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4. Examples

- **Invoke**
  - \( PurchaseData = \text{WrllsCrtCrd (3rdPartyID)} \)

- **Is VndrType = Restaurant?**
  - Yes: \( \text{RestDataBase} = \text{Store (PurchaseData)} \)
  - No: \( \text{OtherDataBase} = \text{Store (PurchaseData)} \)

- **Is VndrType = Transportation?**
  - Yes: \( \text{TransDataBase} = \text{Store (PurchaseData)} \)
  - No: \( \text{LodgDataBase} = \text{Store (PurchaseData)} \)

- **Is VndrType = Lodging?**
  - Yes: \( \text{LodgDataBase} = \text{Store (PurchaseData)} \)
  - No: \( \text{OtherDataBase} = \text{Store (PurchaseData)} \)

- \( \text{TotalSpent} = \text{PrevTotalSpent} + \text{PurchaseTotal} \)
- \( \text{PrevTotalSpent} = \text{TotalSpent} \)

- **ThisTripDataBase = Store (PurchaseData, Psswd)**
- **Dial (OfficeComp#)**

4.6.2. Expense account CWS.
5. Build facilities & example

5.1. Facilities features (select & drag, services menu, special capabilities menu, tools menu)
5.2. PC versus wireless terminal
5.3. School bus compound wireless service
5.4. Build layout for completed school bus CWS.

WirelessServiceName = SchoolBus

Initialized Values
1. Bus# = “1.973.539.1236”
2. Password = “SchoolBus”
3. B = “Green St., Maplewood, NJ”
4. Time = “5 seconds”
5. BusNearby = {A recorded announcement}

BusLoc = Location (Bus#, Password)

Invoke

Yes 

Is BusLoc = B ?

No

Announce (BusNearby)

Pause (Time)

Display (“Time to leave home.”)
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6. Conclusions

6.1. Voice still the “killer ap”
6.2. Excess data capacity
6.3. Compound wireless services => data “killer aps”
6.4. Flat rate vs. per use
6.5. Problematic?
6.6. I’d like to hear your ideas --

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