ANDROID – REST, SOAP

Priprava razvojnega okolja

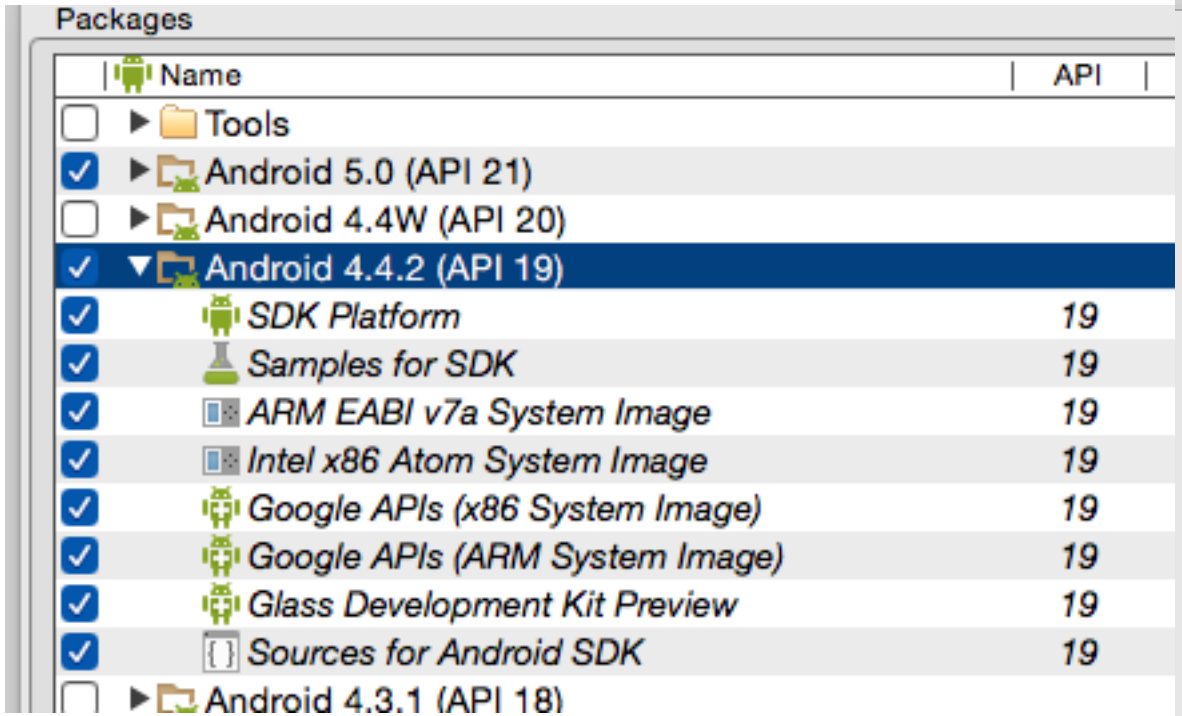
- Android SDK (http://developer.android.com/sdk/index.html)
  - IDE: Eclipse ADT (uporaba na vajah IS)
  - IDE: Android Studio
  - No IDE: SDK Only

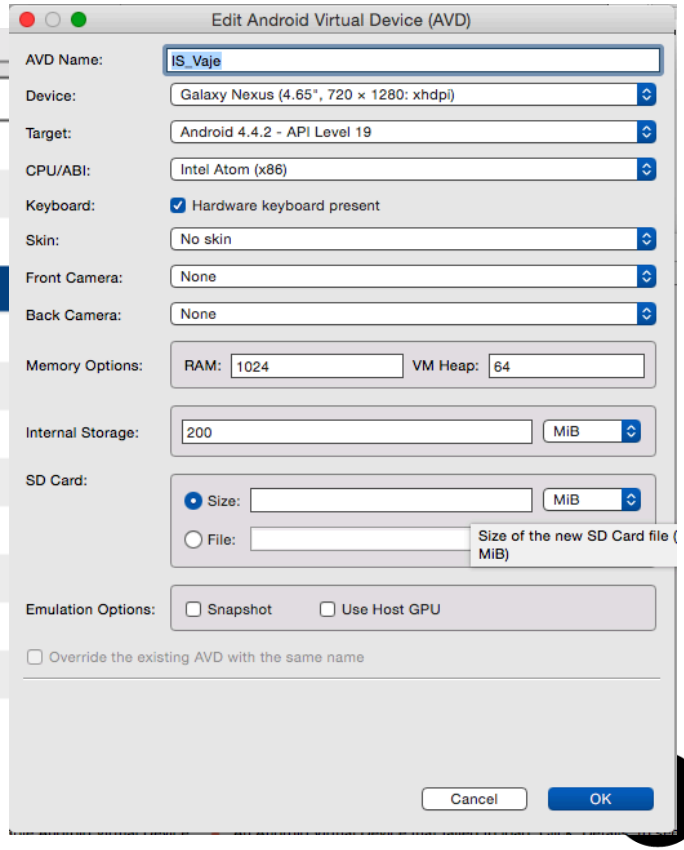
- IDE: IntelliJ IDEA (https://www.jetbrains.com/)
    - Zastonj z EDU e-poštnim računom
    - Preverite tudi ReSharper za VS

Android Emulator

Android SDK Manager  Android Virtual Device (AVD) Manager

https://software.intel.com/en-us/android/articles/intel-hardware-accelerated-execution-manager



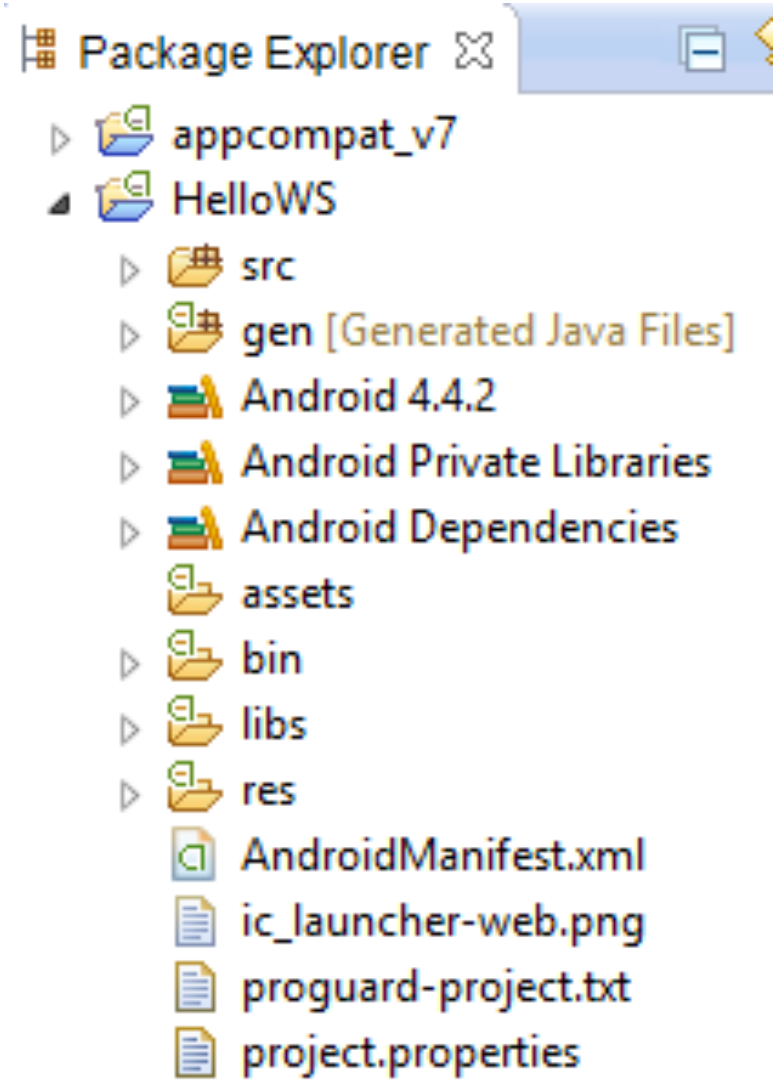


Vaja 1

- Kreirajte Android projekt “Hello WS”
- Preglejte sestavne dele projekta
- Zaženite projekt v Android emulatorju

- Za vedoželjne: http://developer.android.com/training/basics/firstapp/index.html

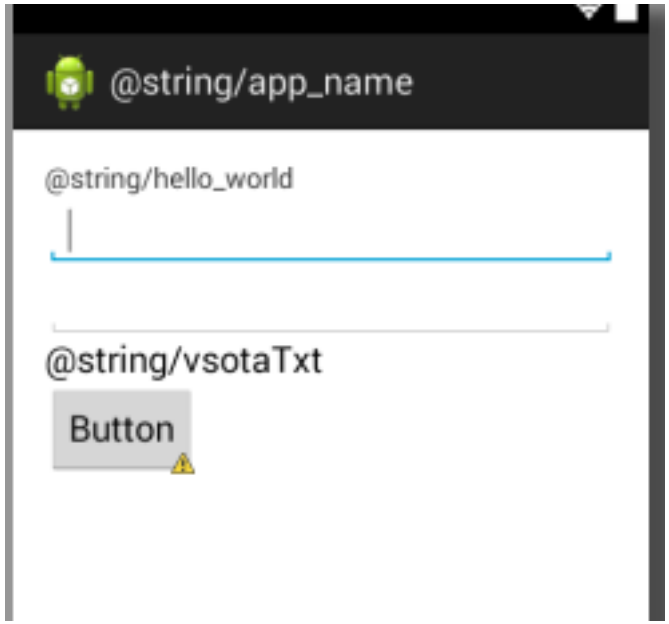
Sestava projekta

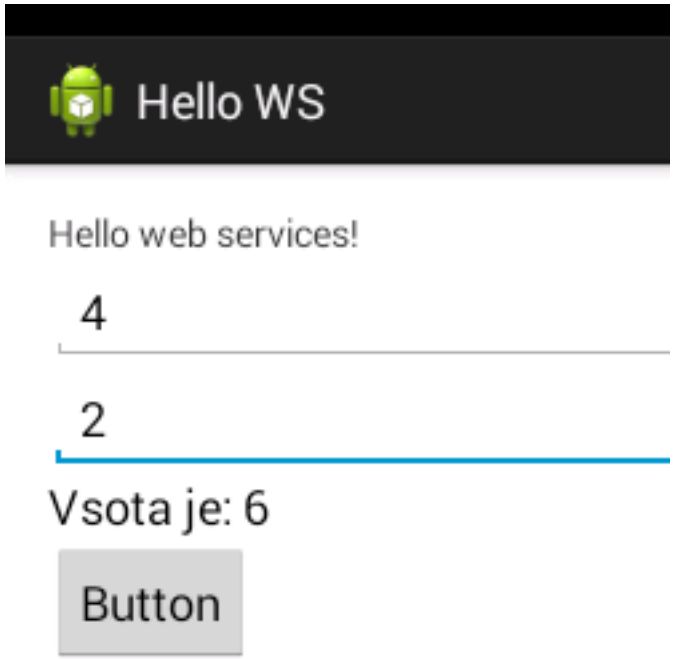


- **./src** – izvorna koda
- **./gen** – generirane Java datoteke (R.java), resursi
- **./bin** – prevedene datoteke (npr. .apk)
- **./res** – viri
- **./AndroidManifest.xml** – omejitve projekta, varnost, uporaba storitev, ...

Vaja 2

- Izdelajte kalkulator (seštevanje)





Vaja 2 - rešitev

- Dodani vnosni polji, izpis in gumb

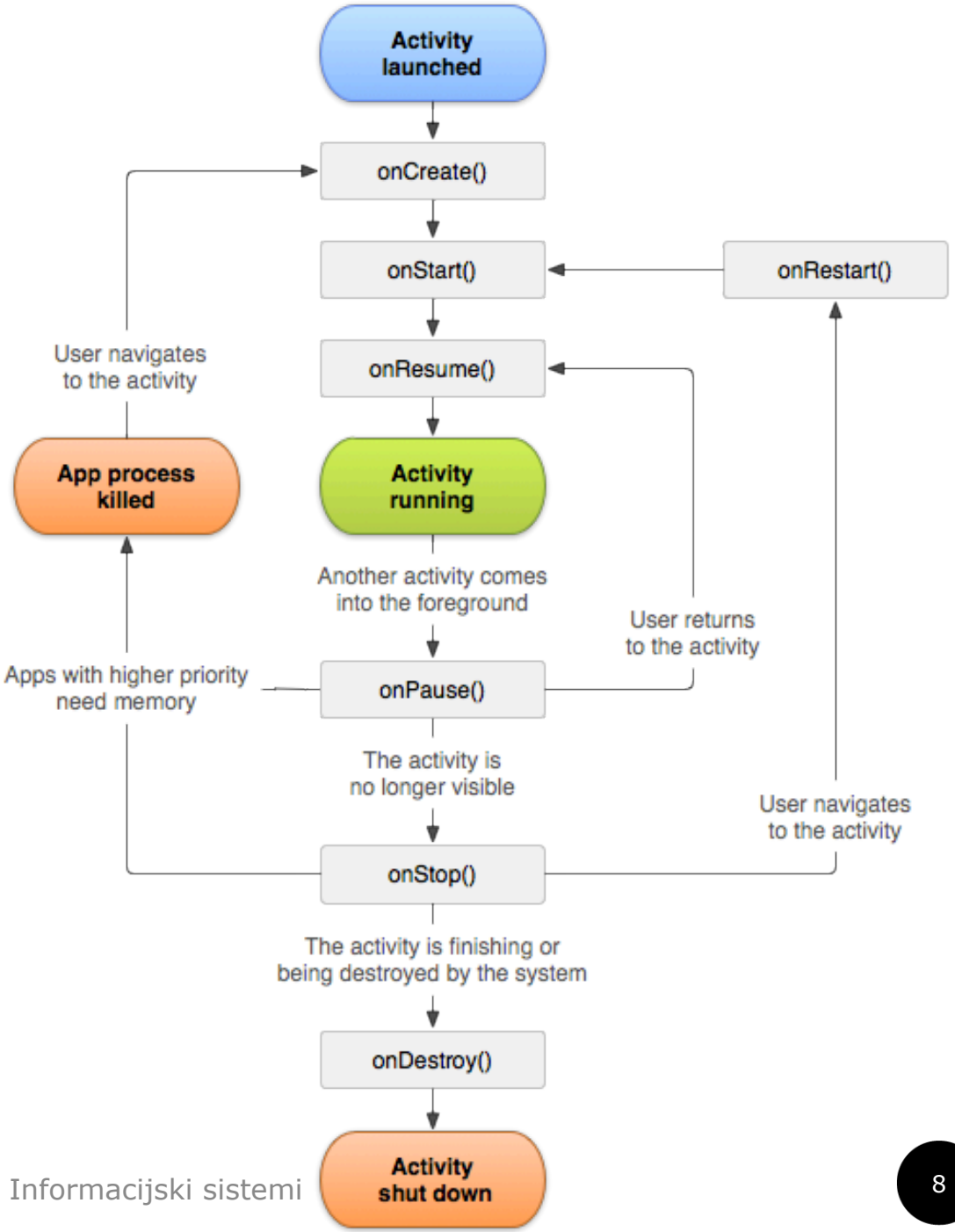
```
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    Button button = (Button)findViewById(R.id.button1);
    button.setOnClickListener(new OnClickListener() {

            @Override
            public void onClick(View v) {
                EditText v1 = (EditText)findViewById(R.id.editText1);
                EditText v2 = (EditText)findViewById(R.id.editText2);
                int sum = Integer.parseInt(v1.getText().toString()) +
                        Integer.parseInt(v2.getText().toString());

                TextView result = (TextView)findViewById(R.id.textView2);
                result.setText("Vsota je: " + sum);
            }
        });
}
```

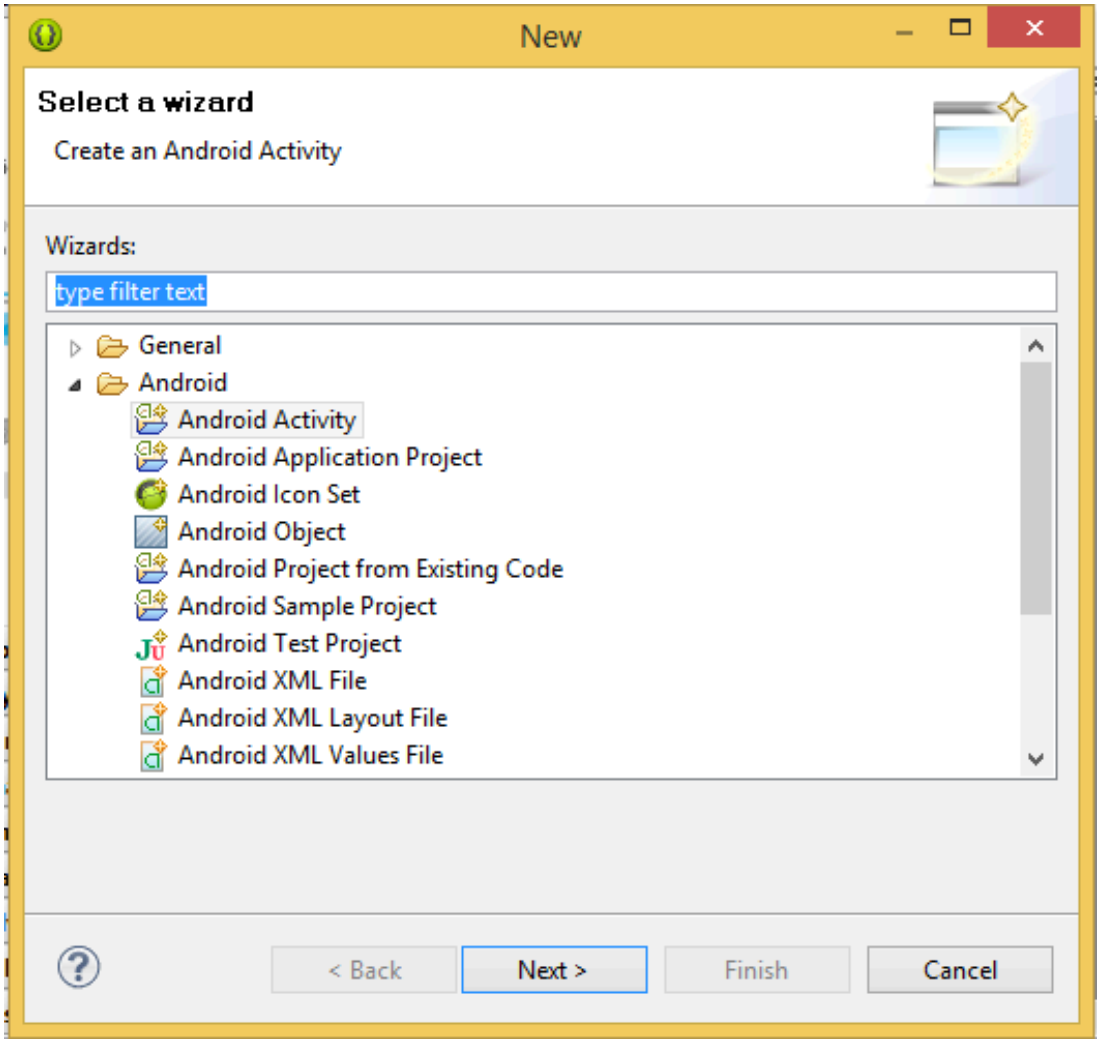
Življenjski cikel



Zgradba Android aplikacij

- Activity – osnovna izvedbena enota, ki navadno vključuje tudi UI; aktivnosti se lahko kličejo med seboj
- Intent – skrbi za komunikacijo med aktivnostmi – abstrakten opis funkcije, ki jo neka aktivnost zahteva od druge aktivnosti

Izdelava nove aktivnosti



Zagon nove aktivnosti

```
<Button android:id="@+id/buttonREST"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="REST"
    android:onClick="openREST"
    android:layout_alignLeft="@+id/linearLayout1"
    android:layout_below="@+id/linearLayout1"
    android:layout_marginTop="14dp"/>
```

```
public void openREST(View v) {
    Intent intent = new Intent(this, RESTActivity.class);
    startActivity(intent);
}
```

AsyncTask

- Enostavna uporabo niti za izvajanje dolgotrajnejših procesov oz. procesov za katere ne moremo z zagotovostjo napovedati trajanja (npr. povezava z intenetom, prenos datoteke, odpiranje baze itd.)
- Zagotavljanje, da je uporabniški vmesnik še vedno odziven, hkrati pa lahko nanj pošiljamo tudi sporočila o napredku
- Dostop do spleta mora biti zato v ločeni niti.

AsyncTask – primer (zagon)

```
myTask1=(MyAsyncTask)new MyAsyncTask().execute(<InParams>);

myTask1.cancel(true);
```

AsyncTask – primer (implementacija)

```
private class MyAsyncTask extends AsyncTask<InParams, ProgressParams, OutParam> {
    protected OutParam doInBackground(InParams... myparams) {
        int count = myparams.length;
        OutParam totalSize = 0;
        for (int i = 0; i < count; i++) {
            totalSize += Downloader.downloadFile(myparams [i]);
            publishProgress((ProgressParams) ((i / (float) count) * 100));
            // Escape early if cancel() is called
            if (isCancelled()) break;
        }
        return totalSize;
    }

    protected void onProgressUpdate(ProgressParams... myparams) {
        setProgressPercent(myparams [0]);
    }

    protected void onPostExecute(OutParam result) {
        showDialog("Downloaded " + result + " bytes");
    }
}
```

Klic storitve REST

- Dodajanje pravice dostopa do Interneta (AndroidManifest.xml)

```
        android:targetSdkVersion="21" />
    <uses-permission android:name="android.permission.INTERNET" />

    <application
```

- Klic storitve
  - V primeru, da se želite iz emulatorja povezati na storitev na lokalnem računalniku, morate uporabiti URL 10.0.2.2

```
public void callREST(View v) {
    RESTCallTask callTask = new RESTCallTask();
    String id = ((EditText)findViewById(R.id.editText1))
            .getText().toString();
    callTask.execute(id);
}
```

Klic storitve REST

```
private class RESTCallTask extends AsyncTask<String, Void, String> {
    private final String URL = "http://zitnik.si/ws/Ime/%s";

    @Override
    protected String doInBackground(String... params) {
        String id = (params[0] == null) ? "0" : params[0];
        String callURL = String.format(URL, id);

        HttpClient hc = new DefaultHttpClient();
        String result = null;

        try {
            HttpGet request = new HttpGet(callURL);
            request.setHeader( "Accept", "application/json" );
            HttpResponse response = hc.execute(request);
            HttpEntity entity = response.getEntity();
            result = EntityUtils.toString(entity);
        } catch (Exception e) {
            e.printStackTrace();
        }

        return result;
    }

    @Override
    protected void onPostExecute(String result) {
        EditText editText = (EditText)findViewById(R.id.editText2);

        editText.setText(result);
    }
}
```

Rezultat JSON (http://www.json.org/)

- http://zitnik.si/ws/Imena
- Rezultat:

[{"ID":1,"Ime":"Joze","Priimek":"Novak"},
{"ID":1,"Ime":"Jozica","Priimek":"Majzelj"},
{"ID":1,"Ime":"Nevenka","Priimek":"Vseved"}]

- Java:

```
JSONArray jsonArray = new JSONArray(result);

JSONObject firstPerson = jsonArray.getJSONObject(0);
int id = firstPerson.getInt("ID");
String name = firstPerson.getString("Ime");
String priimek = firstPerson.getString("Priimek");
```

Spletne storitve SOAP

- Ni dobrega generatorja klientov:
  - http://www.wsdl2code.com/
  - http://easywsdl.com/
  - AndroidSOAP
  - http://wsclient.neurospeech.com/

- Knjižnice (priporočeno):
  - KSoap2 (https://code.google.com/p/ksoap2-android/), primer na učilnici