



Transitioning Applications to Ontologies

The VigiTerms Use Case

Florence Amardeilh
Mondeca

Funded by: European Commission – 6th Framework
Project Reference: IST-2004-026460



Talk Outline

◆ Introduction

- ◆ VigiTerms Project

◆ Ontology Learning

- ◆ Need for a Pharmacovigilance ontology
- ◆ Transitioning Thesaurimed with RDBToOnto

◆ Case report documentation

- ◆ VigiTerms Architecture
- ◆ CA Manager specialised workflow

◆ Conclusion & Future work



The Pharmacovigilance Issue

⇒ *Drug's Adverse Effect profile: Right dose of the right drug to the right patient*

◆ Pharmacovigilant Partner:

- ◆ CRPV de Paris-HEGP. 4 arrondissements de Paris (1, 14, 15, 16) + département 92.
- ◆ 3,5 doctors and pharmacologists
- ◆ >600 dossiers de PV/2007, mainly spontaneous notification
- ◆ 500 cases reported in the national CR database (ArisG5) among them 300 serious AE and 20 fatal AE
- ◆ Notificators : doctors (400), chemists (50), patients (10)

Case report information

- ◆ Notificator identification,
- ◆ Patient characteristics
 - ◆ (initials, age, sexe, background)
- ◆ ➤ All the patient's drug(s)
 - ◆ (chronology, posology, drug route, indication)
- ◆ Produced adverse effect : Gravity, description, evolution, results of the ethiology test;...

Adverse Effect Case report

RÉPUBLIQUE FRANÇAISE



DECLARATION D'EFFET INDÉSIRABLE SUSCEPTIBLE D'ÊTRE DÙ À UN MÉDICAMENT OU PRODUIT MENTIONNÉ À L'ART. R.5144-1

ART. L. 509-10 ET 11, R. 5144-1 à 20 DU CODE DE SANTÉ PUBLIQUE



PHARMACOVIGILANCE

Les informations recueillies ci-dessous sont à usage exclusif des autorités de santé. Elles sont destinées à être transmises au Centre national de pharmacovigilance de l'Agence nationale de sécurité sanitaire de la santé humaine (ANSM) et au Centre régional de pharmacovigilance de la région où se trouve le déclarant. Le déclarant est tenu de fournir les informations nécessaires à la déclaration d'effet indésirable susceptible d'être dû à un médicament ou produit mentionné à l'article R.5144-1 du Code de la Santé publique.

DE CLASSEMENT A, APRÈS 5144-1, AU
Centre de Pharmacovigilance de la Région

Patient traité	Effet indésirable	Autres effets indésirables	Centre de Pharmacovigilance de la Région
Nom (1) Prénoms (2) Sexe <input type="checkbox"/> M <input type="checkbox"/> F	Libellé de l'effet indésirable	<input type="checkbox"/> pils le médicament	Centre de Pharmacovigilance de la Région
Prénoms (3) Prénoms (4) Sexe <input type="checkbox"/> M <input type="checkbox"/> F	Libellé de l'effet indésirable	<input type="checkbox"/> lors de l'administration	
Sexe <input type="checkbox"/> M <input type="checkbox"/> F	Libellé de l'effet indésirable	<input type="checkbox"/> pils le médicament	
Diagnose (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100) (101) (102) (103) (104) (105) (106) (107) (108) (109) (110) (111) (112) (113) (114) (115) (116) (117) (118) (119) (120) (121) (122) (123) (124) (125) (126) (127) (128) (129) (130) (131) (132) (133) (134) (135) (136) (137) (138) (139) (140) (141) (142) (143) (144) (145) (146) (147) (148) (149) (150) (151) (152) (153) (154) (155) (156) (157) (158) (159) (160) (161) (162) (163) (164) (165) (166) (167) (168) (169) (170) (171) (172) (173) (174) (175) (176) (177) (178) (179) (180) (181) (182) (183) (184) (185) (186) (187) (188) (189) (190) (191) (192) (193) (194) (195) (196) (197) (198) (199) (200) (201) (202) (203) (204) (205) (206) (207) (208) (209) (210) (211) (212) (213) (214) (215) (216) (217) (218) (219) (220) (221) (222) (223) (224) (225) (226) (227) (228) (229) (230) (231) (232) (233) (234) (235) (236) (237) (238) (239) (240) (241) (242) (243) (244) (245) (246) (247) (248) (249) (250) (251) (252) (253) (254) (255) (256) (257) (258) (259) (260) (261) (262) (263) (264) (265) (266) (267) (268) (269) (270) (271) (272) (273) (274) (275) (276) (277) (278) (279) (280) (281) (282) (283) (284) (285) (286) (287) (288) (289) (290) (291) (292) (293) (294) (295) (296) (297) (298) (299) (300) (301) (302) (303) (304) (305) (306) (307) (308) (309) (310) (311) (312) (313) (314) (315) (316) (317) (318) (319) (320) (321) (322) (323) (324) (325) (326) (327) (328) (329) (330) (331) (332) (333) (334) (335) (336) (337) (338) (339) (340) (341) (342) (343) (344) (345) (346) (347) (348) (349) (350) (351) (352) (353) (354) (355) (356) (357) (358) (359) (360) (361) (362) (363) (364) (365) (366) (367) (368) (369) (370) (371) (372) (373) (374) (375) (376) (377) (378) (379) (380) (381) (382) (383) (384) (385) (386) (387) (388) (389) (390) (391) (392) (393) (394) (395) (396) (397) (398) (399) (400) (401) (402) (403) (404) (405) (406) (407) (408) (409) (410) (411) (412) (413) (414) (415) (416) (417) (418) (419) (420) (421) (422) (423) (424) (425) (426) (427) (428) (429) (430) (431) (432) (433) (434) (435) (436) (437) (438) (439) (440) (441) (442) (443) (444) (445) (446) (447) (448) (449) (450) (451) (452) (453) (454) (455) (456) (457) (458) (459) (460) (461) (462) (463) (464) (465) (466) (467) (468) (469) (470) (471) (472) (473) (474) (475) (476) (477) (478) (479) (480) (481) (482) (483) (484) (485) (486) (487) (488) (489) (490) (491) (492) (493) (494) (495) (496) (497) (498) (499) (500) (501) (502) (503) (504) (505) (506) (507) (508) (509) (510) (511) (512) (513) (514) (515) (516) (517) (518) (519) (520) (521) (522) (523) (524) (525) (526) (527) (528) (529) (530) (531) (532) (533) (534) (535) (536) (537) (538) (539) (540) (541) (542) (543) (544) (545) (546) (547) (548) (549) (550) (551) (552) (553) (554) (555) (556) (557) (558) (559) (560) (561) (562) (563) (564) (565) (566) (567) (568) (569) (570) (571) (572) (573) (574) (575) (576) (577) (578) (579) (580) (581) (582) (583) (584) (585) (586) (587) (588) (589) (590) (591) (592) (593) (594) (595) (596) (597) (598) (599) (600) (601) (602) (603) (604) (605) (606) (607) (608) (609) (610) (611) (612) (613) (614) (615) (616) (617) (618) (619) (620) (621) (622) (623) (624) (625) (626) (627) (628) (629) (630) (631) (632) (633) (634) (635) (636) (637) (638) (639) (640) (641) (642) (643) (644) (645) (646) (647) (648) (649) (650) (651) (652) (653) (654) (655) (656) (657) (658) (659) (660) (661) (662) (663) (664) (665) (666) (667) (668) (669) (670) (671) (672) (673) (674) (675) (676) (677) (678) (679) (680) (681) (682) (683) (684) (685) (686) (687) (688) (689) (690) (691) (692) (693) (694) (695) (696) (697) (698) (699) (700) (701) (702) (703) (704) (705) (706) (707) (708) (709) (710) (711) (712) (713) (714) (715) (716) (717) (718) (719) (720) (721) (722) (723) (724) (725) (726) (727) (728) (729) (730) (731) (732) (733) (734) (735) (736) (737) (738) (739) (740) (741) (742) (743) (744) (745) (746) (747) (748) (749) (750) (751) (752) (753) (754) (755) (756) (757) (758) (759) (760) (761) (762) (763) (764) (765) (766) (767) (768) (769) (770) (771) (772) (773) (774) (775) (776) (777) (778) (779) (780) (781) (782) (783) (784) (785) (786) (787) (788) (789) (790) (791) (792) (793) (794) (795) (796) (797) (798) (799) (800) (801) (802) (803) (804) (805) (806) (807) (808) (809) (810) (811) (812) (813) (814) (815) (816) (817) (818) (819) (820) (821) (822) (823) (824) (825) (826) (827) (828) (829) (830) (831) (832) (833) (834) (835) (836) (837) (838) (839) (840) (841) (842) (843) (844) (845) (846) (847) (848) (849) (850) (851) (852) (853) (854) (855) (856) (857) (858) (859) (860) (861) (862) (863) (864) (865) (866) (867) (868) (869) (870) (871) (872) (873) (874) (875) (876) (877) (878) (879) (880) (881) (882) (883) (884) (885) (886) (887) (888) (889) (890) (891) (892) (893) (894) (895) (896) (897) (898) (899) (900) (901) (902) (903) (904) (905) (906) (907) (908) (909) (910) (911) (912) (913) (914) (915) (916) (917) (918) (919) (920) (921) (922) (923) (924) (925) (926) (927) (928) (929) (930) (931) (932) (933) (934) (935) (936) (937) (938) (939) (940) (941) (942) (943) (944) (945) (946) (947) (948) (949) (950) (951) (952) (953) (954) (955) (956) (957) (958) (959) (960) (961) (962) (963) (964) (965) (966) (967) (968) (969) (970) (971) (972) (973) (974) (975) (976) (977) (978) (979) (980) (981) (982) (983) (984) (985) (986) (987) (988) (989) (990) (991) (992) (993) (994) (995) (996) (997) (998) (999) (1000) (1001) (1002) (1003) (1004) (1005) (1006) (1007) (1008) (1009) (1010) (1011) (1012) (1013) (1014) (1015) (1016) (1017) (1018) (1019) (1020) (1021) (1022) (1023) (1024) (1025) (1026) (1027) (1028) (1029) (1030) (1031) (1032) (1033) (1034) (1035) (1036) (1037) (1038) (1039) (1040) (1041) (1042) (1043) (1044) (1045) (1046) (1047) (1048) (1049) (1050) (1051) (1052) (1053) (1054) (1055) (1056) (1057) (1058) (1059) (1060) (1061) (1062) (1063) (1064) (1065) (1066) (1067) (1068) (1069) (1070) (1071) (1072) (1073) (1074) (1075) (1076) (1077) (1078) (1079) (1080) (1081) (1082) (1083) (1084) (1085) (1086) (1087) (1088) (1089) (1090) (1091) (1092) (1093) (1094) (1095) (1096) (1097) (1098) (1099) (1100) (1101) (1102) (1103) (1104) (1105) (1106) (1107) (1108) (1109) (1110) (1111) (1112) (1113) (1114) (1115) (1116) (1117) (1118) (1119) (1120) (1121) (1122) (1123) (1124) (1125) (1126) (1127) (1128) (1129) (1130) (1131) (1132) (1133) (1134) (1135) (1136) (1137) (1138) (1139) (1140) (1141) (1142) (1143) (1144) (1145) (1146) (1147) (1148) (1149) (1150) (1151) (1152) (1153) (1154) (1155) (1156) (1157) (1158) (1159) (1160) (1161) (1162) (1163) (1164) (1165) (1166) (1167) (1168) (1169) (1170) (1171) (1172) (1173) (1174) (1175) (1176) (1177) (1178) (1179) (1180) (1181) (1182) (1183) (1184) (1185) (1186) (1187) (1188) (1189) (1190) (1191) (1192) (1193) (1194) (1195) (1196) (1197) (1198) (1199) (1200) (1201) (1202) (1203) (1204) (1205) (1206) (1207) (1208) (1209) (1210) (1211) (1212) (1213) (1214) (1215) (1216) (1217) (1218) (1219) (1220) (1221) (1222) (1223) (1224) (1225) (1226) (1227) (1228) (1229) (1230) (1231) (1232) (1233) (1234) (1235) (1236) (1237) (1238) (1239) (1240) (1241) (1242) (1243) (1244) (1245) (1246) (1247) (1248) (1249) (1250) (1251) (1252) (1253) (1254) (1255) (1256) (1257) (1258) (1259) (1260) (1261) (1262) (1263) (1264) (1265) (1266) (1267) (1268) (1269) (1270) (1271) (1272) (1273) (1274) (1275) (1276) (1277) (1278) (1279) (1280) (1281) (1282) (1283) (1284) (1285) (1286) (1287) (1288) (1289) (1290) (1291) (1292) (1293) (1294) (1295) (1296) (1297) (1298) (1299) (1300) (1301) (1302) (1303) (1304) (1305) (1306) (1307) (1308) (1309) (1310) (1311) (1312) (1313) (1314) (1315) (1316) (1317) (1318) (1319) (1320) (1321) (1322) (1323) (1324) (1325) (1326) (1327) (1328) (1329) (1330) (1331) (1332) (1333) (1334) (1335) (1336) (1337) (1338) (1339) (1340) (1341) (1342) (1343) (1344) (1345) (1346) (1347) (1348) (1349) (1350) (1351) (1352) (1353) (1354) (1355) (1356) (1357) (1358) (1359) (1360) (1361) (1362) (1363) (1364) (1365) (1366) (1367) (1368) (1369) (1370) (1371) (1372) (1373) (1374) (1375) (1376) (1377) (1378) (1379) (1380) (1381) (1382) (1383) (1384) (1385) (1386) (1387) (1388) (1389) (1390) (1391) (1392) (1393) (1394) (1395) (1396) (1397) (1398) (1399) (1400) (1401) (1402) (1403) (1404) (1405) (1406) (1407) (1408) (1409) (1410) (1411) (1412) (1413) (1414) (1415) (1416) (1417) (1418) (1419) (1420) (1421) (1422) (1423) (1424) (1425) (1426) (1427) (1428) (1429) (1430) (1431) (1432) (1433) (1434) (1435) (1436) (1437) (1438) (1439) (1440) (1441) (1442) (1443) (1444) (1445) (1446) (1447) (1448) (1449) (1450) (1451) (1452) (1453) (1454) (1455) (1456) (1457) (1458) (1459) (1460) (1461) (1462) (1463) (1464) (1465) (1466) (1467) (1468) (1469) (1470) (1471) (1472) (1473) (1474) (1475) (1476) (1477) (1478) (1479) (1480) (1481) (1482) (1483) (1484) (1485) (1486) (1487) (1488) (1489) (1490) (1491) (1492) (1493) (1494) (1495) (1496) (1497) (1498) (1499) (1500) (1501) (1502) (1503) (1504) (1505) (1506) (1507) (1508) (1509) (1510) (1511) (1512) (1513) (1514) (1515) (1516) (1517) (1518) (1519) (1520) (1521) (1522) (1523) (1524) (1525) (1526) (1527) (1528) (1529) (1530) (1531) (1532) (1533) (1534) (1535) (1536) (1537) (1538) (1539) (1540) (1541) (1542) (1543) (1544) (1545) (1546) (1547) (1548) (1549) (1550) (1551) (1552) (1553) (1554) (1555) (1556) (1557) (1558) (1559) (1560) (1561) (1562) (1563) (1564) (1565) (1566) (1567) (1568) (1569) (1570) (1571) (1572) (1573) (1574) (1575) (1576) (1577) (1578) (1579) (1580) (1581) (1582) (1583) (1584) (1585) (1586) (1587) (1588) (1589) (1590) (1591) (1592) (1593) (1594) (1595) (1596) (1597) (1598) (1599) (1600) (1601) (1602) (1603) (1604) (1605) (1606) (1607) (1608) (1609) (1610) (1611) (1612) (1613) (1614) (1615) (1616) (1617) (1618) (1619) (1620) (1621) (1622) (1623) (1624) (1625) (1626) (1627) (1628) (1629) (1630) (1631) (1632) (1633) (1634) (1635) (1636) (1637) (1638) (1639) (1640) (1641) (1642) (1643) (1644) (1645) (1646) (1647) (1648) (1649) (1650) (1651) (1652) (1653) (1654) (1655) (1656) (1657) (1658) (1659) (1660) (1661) (1662) (1663) (1664) (1665) (1666) (1667) (1668) (1669) (1670) (1671) (1672) (1673) (1674) (1675) (1676) (1677) (1678) (1679) (1680) (1681) (1682) (1683) (1684) (1685) (1686) (1687) (1688) (1689) (1690) (1691) (1692) (1693) (1694) (1695) (1696) (1697) (1698) (1699) (1700) (1701) (1702) (1703) (1704) (1705) (1706) (1707) (1708) (1709) (1710) (1711) (1712) (1713) (1714) (1715) (1716) (1717) (1718) (1719) (1720) (1721) (1722) (1723) (1724) (1725) (1726) (1727) (1728) (1729) (1730) (1731) (1732) (1733) (1734) (1735) (1736) (1737) (1738) (1739) (1740) (1741) (1742) (1743) (1744) (1745) (1746) (1747) (1748) (1749) (1750) (1751) (1752) (1753) (1754) (1755) (1756) (1757) (1758) (1759) (1760) (1761) (1762) (1763) (1764) (1765) (1766) (1767) (1768) (1769) (1770) (1771) (1772) (1773) (1774) (1775) (1776) (1777) (1778) (1779) (1780) (1781) (1782) (1783) (1784) (1785) (1786) (1787) (1788) (1789) (1790) (1791) (1792) (1793) (1794) (1795) (1796) (1797) (1798) (1799) (1800) (1801) (1802) (1803) (1804) (1805) (1806) (1807) (1808) (1809) (1810) (1811) (1812) (1813) (1814) (1815) (1816) (1817) (1818) (1819) (1820) (1821) (1822) (1823) (1824) (1825) (1826) (1827) (1828) (1829) (1830) (1831) (1832) (1833) (1834) (1835) (1836) (1837) (1838) (1839) (1840) (1841) (1842) (1843) (1844) (1845) (1846) (1847) (1848) (1849) (1850) (1851) (1852) (1853) (1854) (1855) (1856) (1857) (1858) (1859) (1860) (1861) (1862) (1863) (1864) (1865) (1866) (1867) (1868) (1869) (1870) (1871) (1872) (1873) (1874) (1875) (1876) (1877) (1878) (1879) (1880) (1881) (1882) (1883) (1884) (1885) (1886) (1887) (1888) (1889) (1890) (1891) (1892) (1893) (1894) (1895) (1896) (1897) (1898) (1899) (1900) (1901) (1902) (1903) (1904) (1905) (1906) (1907) (1908) (1909) (1910) (1911) (1912) (1913) (1914) (1915) (1916) (1917) (1918) (1919) (1920) (1921) (1922) (1923) (1924) (1925) (1926) (1927) (1928) (1929) (1930) (1931) (1932) (1933) (1934) (1935) (1936) (1937) (1938) (1939) (1940) (1941) (1942) (1943) (1944) (1945) (1946) (1947) (1948) (1949) (1950) (1951) (1952) (1953) (1954) (1955) (1956) (1957) (1958) (1959) (1960) (1961) (1962) (1963) (1964) (1965) (1966) (1967) (1968) (1969) (1970) (1971) (1972) (1973) (1974) (1975) (1976) (1977) (1978) (1979) (1980) (1981) (1982) (1983) (1984) (1985) (1986) (1987) (1988) (1989) (1990) (1991) (1992) (1993) (1994) (1995) (1996) (1997) (1998) (1999) (2000) (2001) (2002) (2003) (2004) (2005) (2006) (2007) (2008) (2009) (2010) (2011) (2012) (2013) (2014) (2015) (2016) (2017) (2018) (2019) (2020) (2021) (2022) (2023) (2024) (2025) (2026) (2027) (2028) (2029) (2030) (2031) (2032) (2033) (2034) (2035) (2036) (2037) (2038) (2039) (2040) (2041) (2042) (2043) (2044) (2045) (2046) (2047) (2048) (2049) (2050) (2051) (2052) (2053) (2054) (2055) (2056) (2057) (2058) (2059) (2060) (2061) (2062) (2063) (2064) (2065) (2066) (2067) (2068) (2069) (2070) (2071) (2072) (2073) (2074) (2075) (2076) (2077) (2078) (2079) (2080) (2081) (2082) (2083) (2084) (2085) (2086) (2087) (2088) (2089) (2090) (2091) (2092) (2			

Vigiterms project

- ◆ A French-founded (ANR) research project reusing TAO outputs
- ◆ The main objective is to **improve the process of detecting a new unforeseen signal between an adverse effect and a drug.**

→ **Easing case report documentation by Pharmacovigilants** based on available resources:

- the pharmacovigilance case report database,
- the medical literature abstract (MedLine),
- the medical terminologies and thesaurus,
- the drug characteristics,
- the external specialized databases or resources.

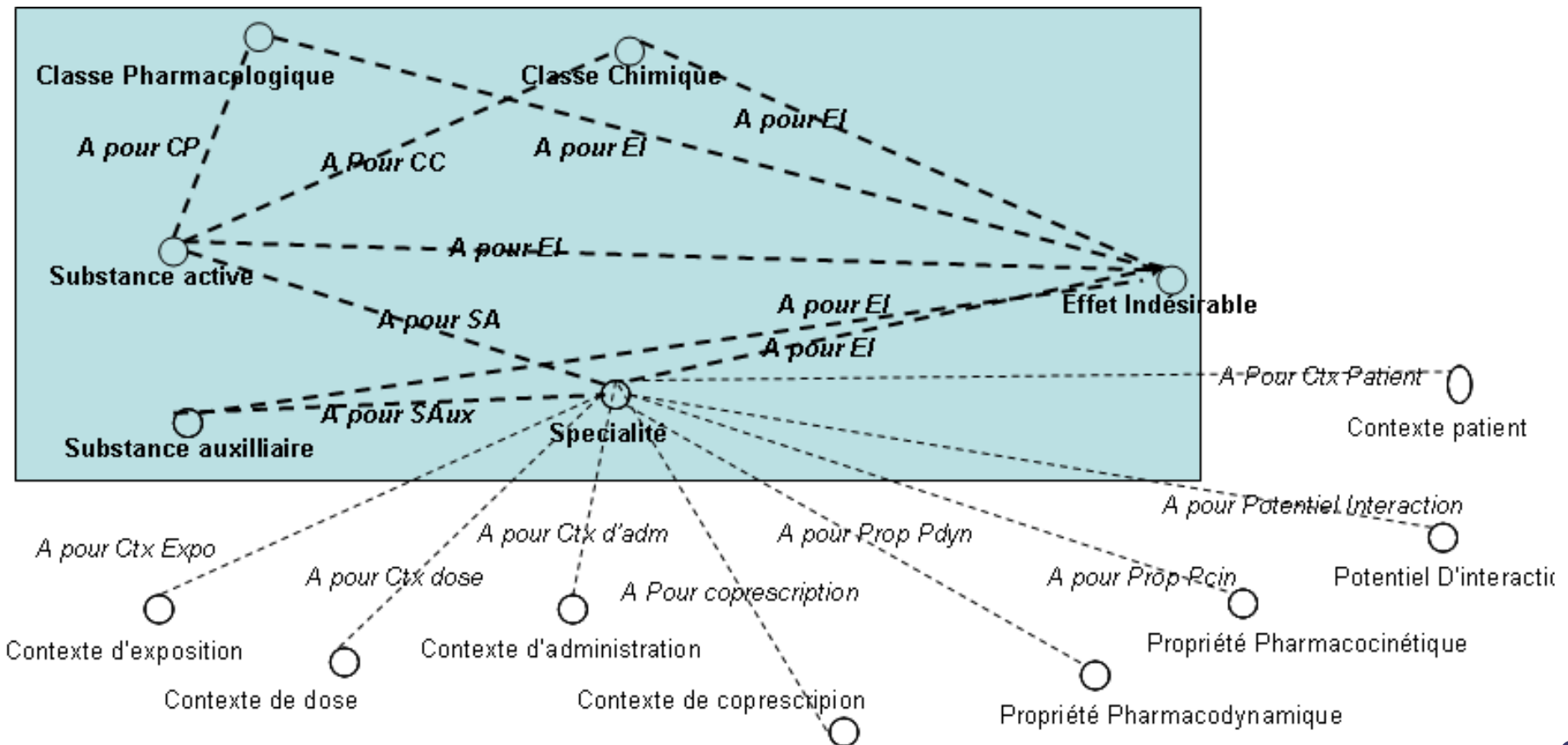
VigiTerms project

◆ TAO components are used to:

- ◆ Create a **Signal Detection Ontology** modelling adverse effects, drugs and the patient context
 - ◆ based on existing medical terminologies (such as WHO-ART, SNOMED, MedDRA) and existing drug databases (Thesorimed, Vidal)
- ◆ **Annotate the medical and pharmaceutical literature** available into MedLine, DrugDex, etc. for the case report documentation
- ◆ **Transition the legacy application** (Aris G5) which collects Adverse Effect Drug Reaction reports with detail on patients, drugs, adverse reaction details, etc.

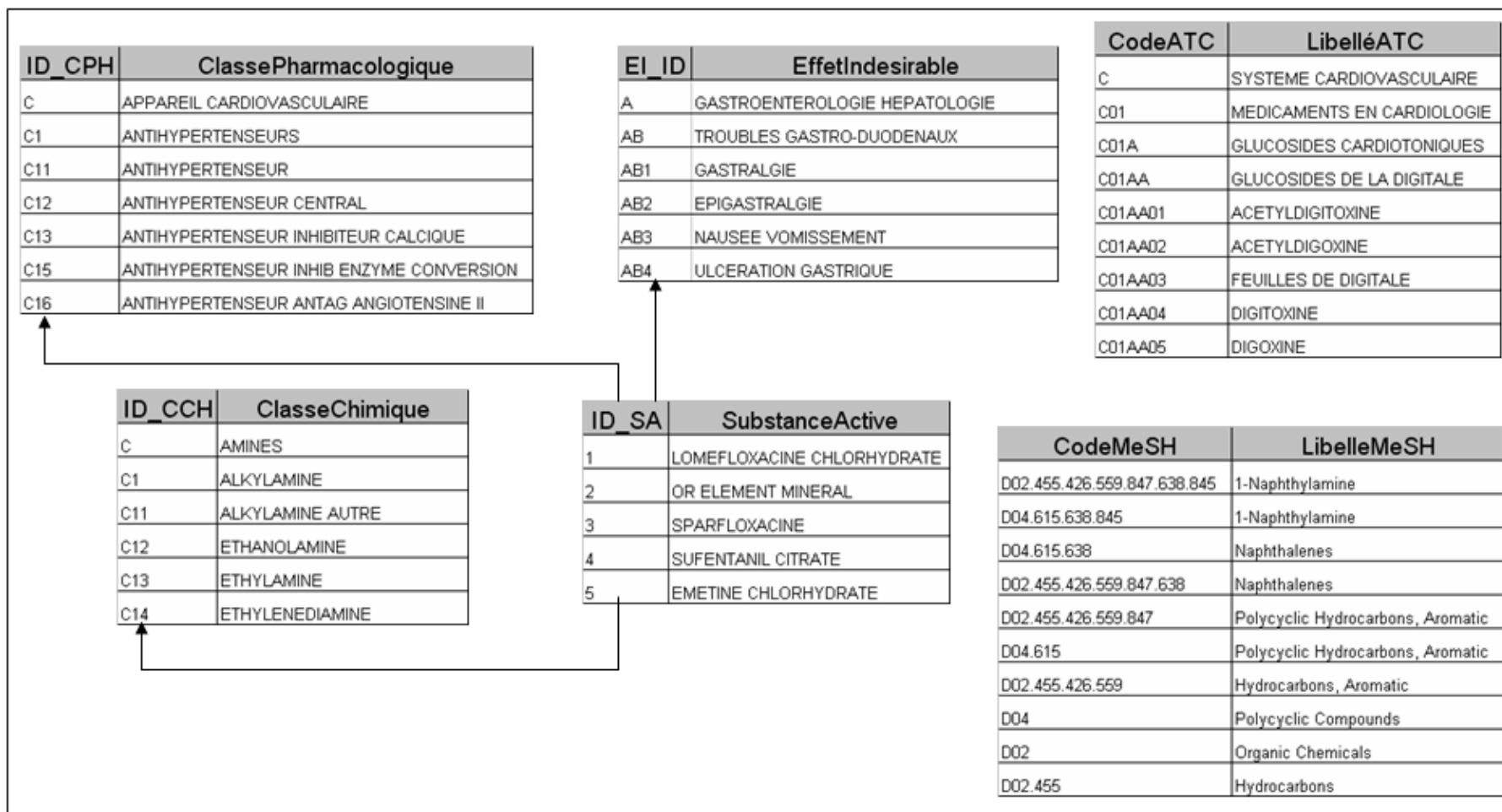
Transitioning medical resources

- existing drug databases such as the French Thesorimed with references to standard medical classifications



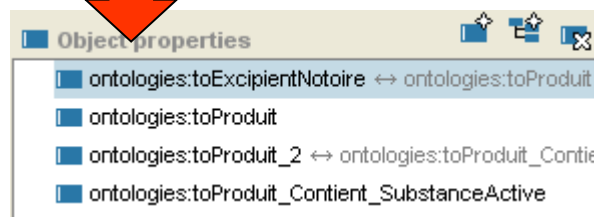
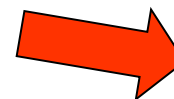
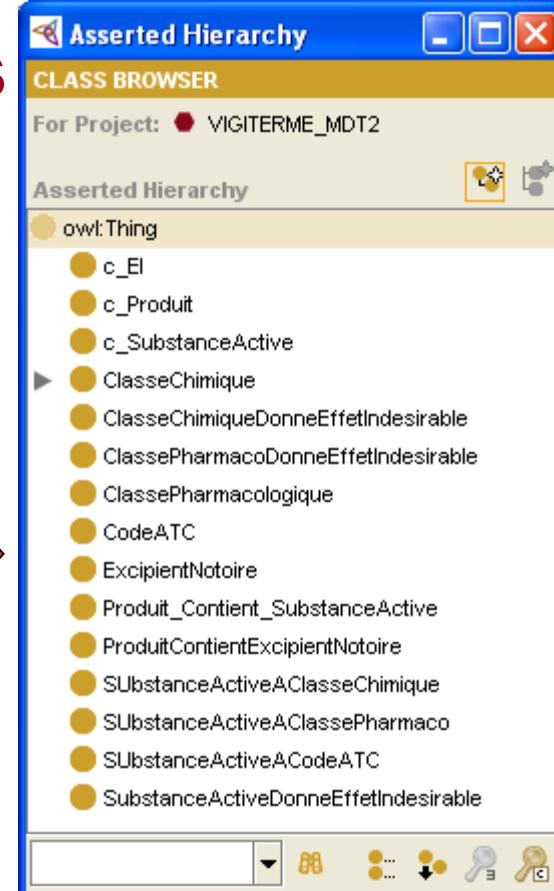
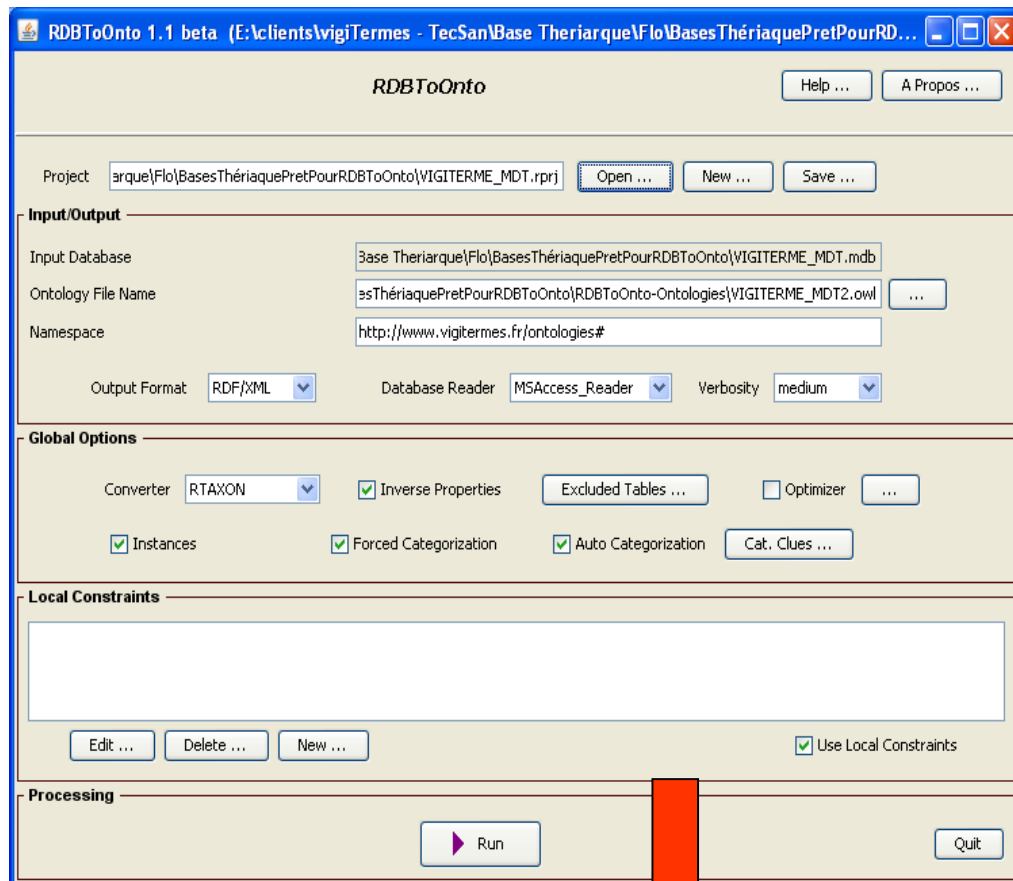
Transitioning medical resources

- ◆ Sub-part of Thesorimed database model to test the transitioning process with RDBToOnto



Transitioning medical resources

Using RDBToOnto



- ontologies:c_SubstanceActive-SubstanceActive
- ontologies:ClasseATC
- ontologies:ClasseChimiqueDonneEffetIndesirable
- ontologies:ClassePharmaco
- ontologies:CodeATC-CodeATC
- ontologies:CodeCCH
- ontologies:CodeCPH
- ontologies:CodeEI
- ontologies:CodePere
- ontologies:CodePereCCH
- ontologies:CodePereCPH
- ontologies:EffetIndesirable
- ontologies:EI
- ontologies:Excipient

Improving the RDBToOnto algorithms for generating deeper taxonomies

The screenshot displays the Protégé ontology editor interface. The top navigation bar includes tabs for Metadata (ontologies), OWLClasses, Properties, Individuals, and Forms. The left pane, titled 'SUBCLASS EXPLORER', shows the 'Asserted Hierarchy' for the project 'RTAXON2_test_Hierarchies_20090108_ok'. It lists a hierarchy starting from 'owl:Thing' and branching into 'CCH_Theriaque_hierarchy', which further branches into 'ACIDES', 'ACIDES_CARBOXYLIQUES_DERIVES', 'ALCOOL', 'AMINES', 'AMINOACIDES', and 'ANIONIQUES'. The 'ANIONIQUES' class is expanded, showing subclasses like 'CHLORHYDRATE_DERIVE', 'NITRATE_DERIVE', 'PHOSPHATE_DERIVE', and 'SULFATE_DERIVE'. The 'SULFATE_DERIVE' class is further expanded, listing subclasses such as 'ABACAVIR_SULFATE', 'AMIKACINE_SULFATE', 'AMMONIUM_LAURYLSULFATE', 'AMPHETAMINE_SULFATE', 'ATROPINE_SULFATE', 'BAMETHAN_SULFATE', and 'BARYUM SULFATE'. The right pane, titled 'CLASS EDITOR', shows the 'For Class: Af (instance of owl:Class)' and includes an 'Inferred View' checkbox. The 'Property' table lists 'rdfs:comment'. Below the table, there are icons for adding and removing properties. The bottom section of the right pane displays a list of classes, including 'ANTIRETROVIRAL', 'ANTIVIRAL_ANALOGUE_NUCLEOSIDE', 'ANTIVIRAL_INHIB_TRANSCRIPTASE_INVERSE', 'ANTIVIRAL_SYSTEMIQUE', 'NUCLEOSIDE', 'SubstanceActive', 'SubstancesAyantCCH', and 'SULFATE_DERIVE'.

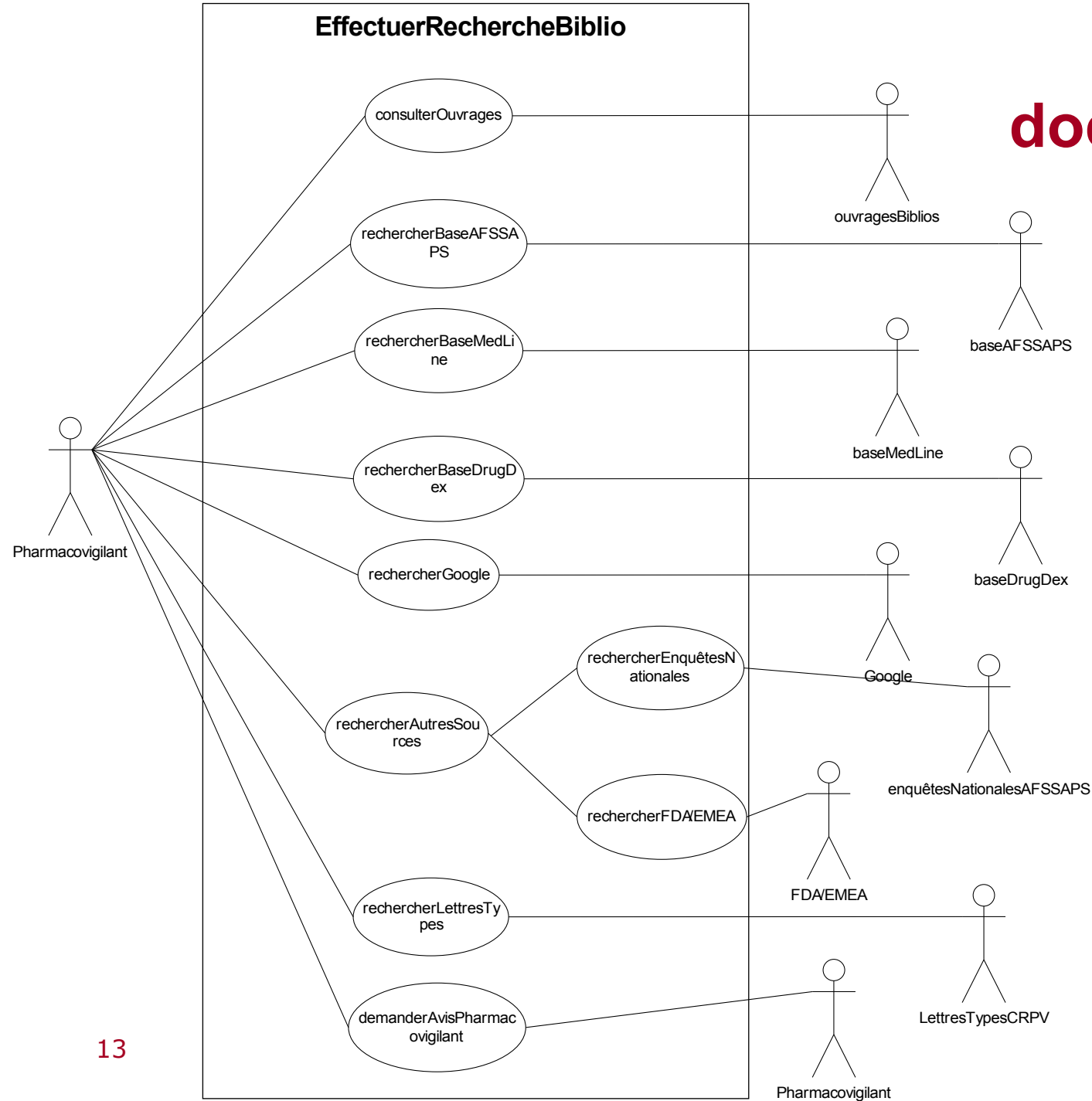
1

Pharmacovigilant Knowledge Store

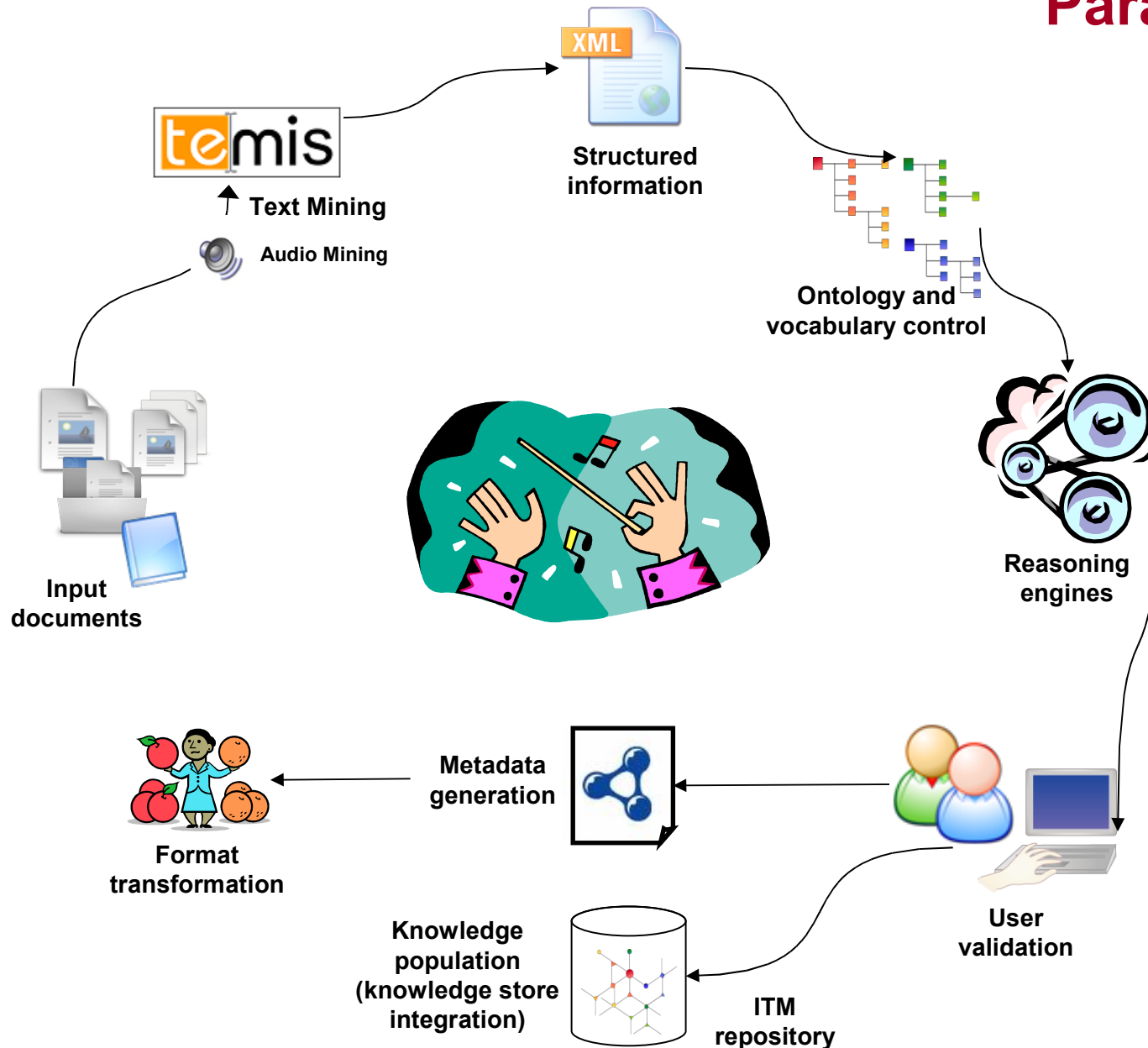
❖ Storing and querying the Knowledge Store (ITM)



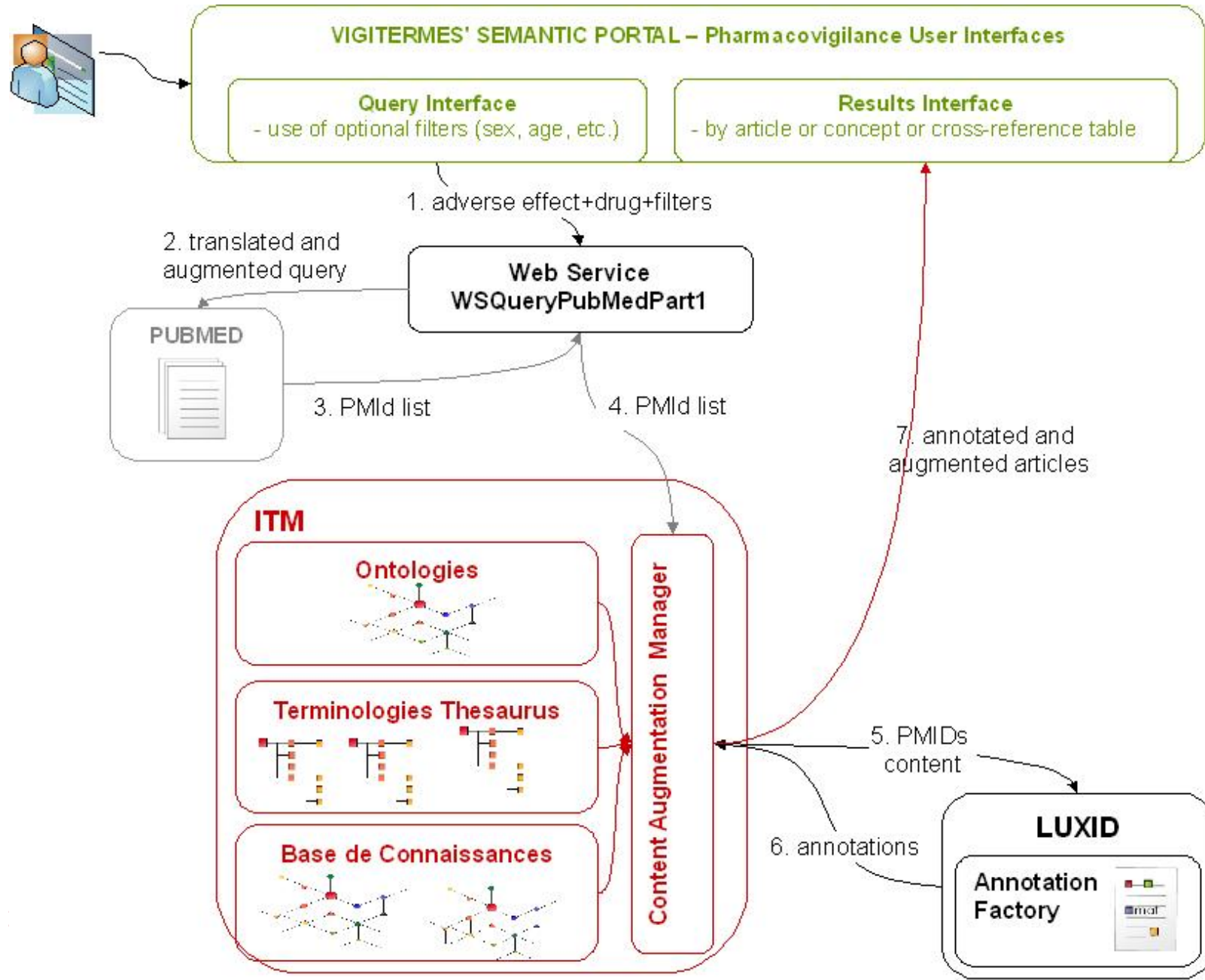
Case report documentation use case



Ontology Population & Semantic annotation Paradigms



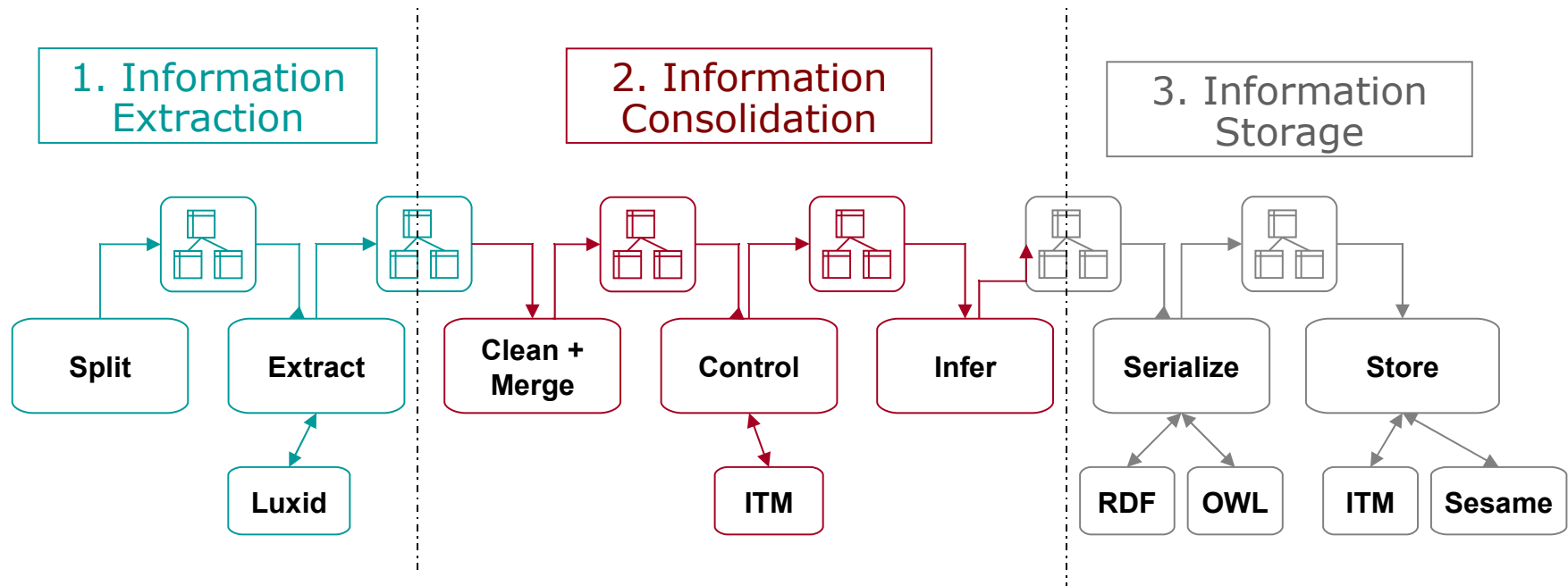
Case report Documentation Workflow



Content Augmentation Process

- ◆ Defining the CA process as based on 3 main steps :
 - ◆ Information Extraction
 - ◆ Information Consolidation
 - ◆ Information Storage
- ◆ Having a unique exchange format between each step
- ◆ Having a set of consolidation services according to the objectives and tools at disposal of the target application
- ◆ Being open-source and thus, each component must be independent from any existing platform or tool
- ◆ Relying on a Service Oriented Architecture (SOA)

CA manager pipeline



- ◇ Processing pipeline
- ◇ Common Analysis Structure (CAS) (cf. UIMA)

CA-Manager applied to Case Report Documentation

◆ Demo of CA-Manager



Conclusion & Future work

◆ Purpose

- ◆ Support case report documentation
- ◆ Detect new signals

◆ On going work

- ◆ Integrating components together
- ◆ Defining text mining patterns
- ◆ Integrating existing ontologies and terminologies together in an ontology model for pharmacovigilance
- ◆ User interfaces for reporting and interrogating case reports

◆ Future plans

- ◆ Implement data mining component based on LCA techniques to detect automatically new signals based on the knowledge base

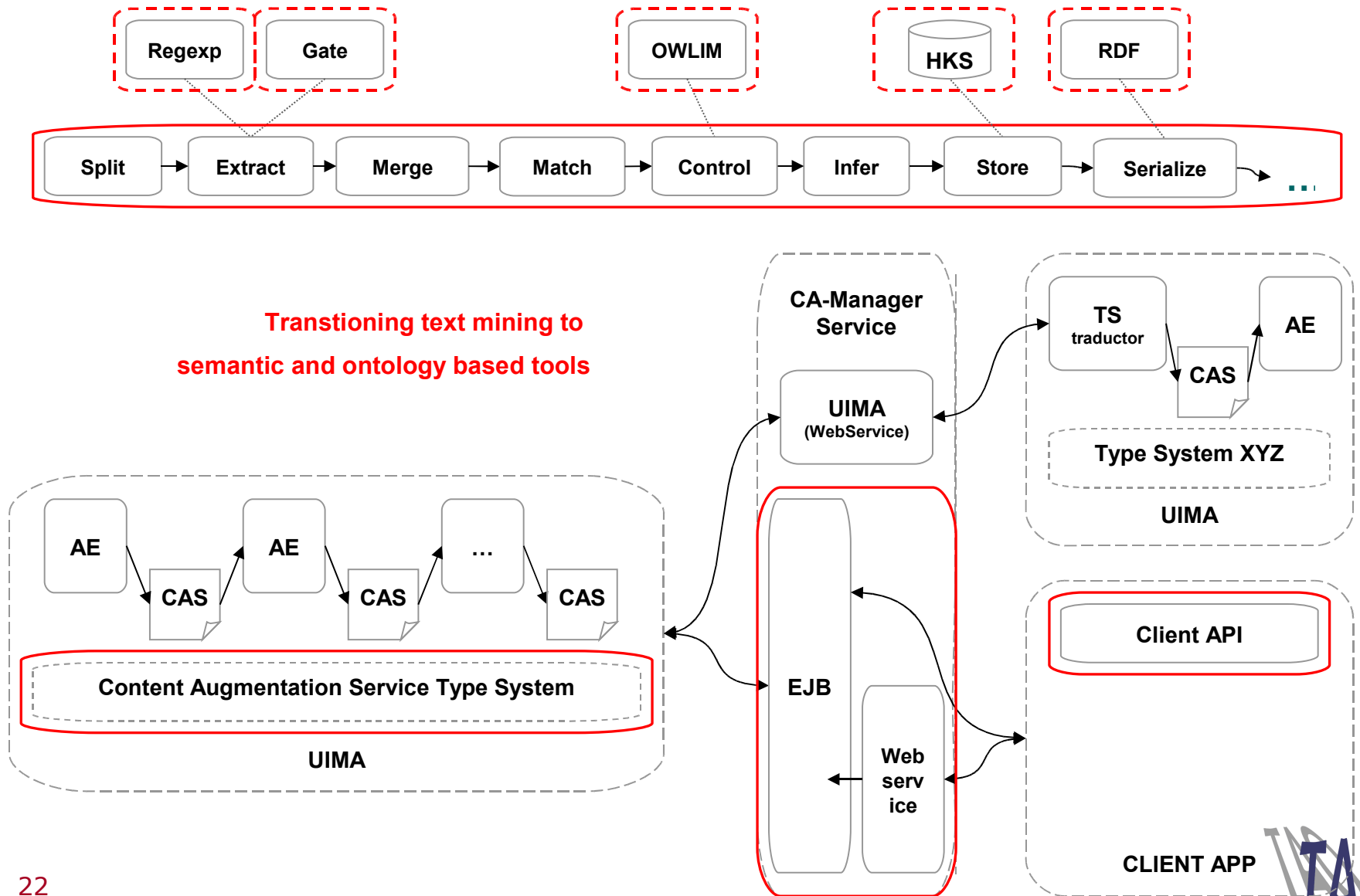
End

Questions? Discussion welcome!

Achieved in second year : CA-Manager architecture

- ◆ Choice of UIMA as CA-Manager backbone.
 - ◆ IBM open-source framework
 - ◆ « UIMA supports the development, discovery, composition and deployment of multi-modal analytics for the analysis of unstructured information and its integration with search technologies »
 - ◆ Benefits :
 - ◆ Ability to define flexible processing flows
 - ◆ distributed & pluggable components
 - ◆ XML configuration of components
 - ◆ A common data structure between components
 - ◆ Sharing & reusing open-source components
- ◆ Other solution : 100% webservices
 - ◆ No need to have webservices inside internal components of TAO
 - ◆ Potentially slow & hard to maintain
 - ◆ Lots of things to reimplement

Achieved in second year : CA-Manager architecture



Achieved in second year : CA-Manager architecture

- ◆ The architecture
 - ◆ Is a specialized UIMA pipeline
 - ◆ Focuses on transioning text-mining results to semantic tools
 - ◆ Is meant to hide UIMA complexity if not required
 - ◆ Provides a `_service_` (simple, remote)
 - ◆ Benefits from UIMA framework (process configuration, distributed architecture, connection to other UIMA based tools, etc.)
 - ◆ Is pluggable (possibility to write a connector to a new external tool)
- ◆ Added value (how is it better than just UIMA ?)
 - ◆ Definition of a generic Common Analysis Structure
 - ◆ Mapping language to map IE results to CAS
 - ◆ Specialization of UIMA pipeline
 - ◆ Connectors to various external tools
 - ◆ Hide UIMA complexity

Achieved in second year: CA-Manager

◆ Demo of CA-Manager



CA-Manager : Coming next

◈ OK so far :

- ◈ Specifications and architecture
- ◈ KCIT integration
- ◈ Working prototype

◈ Coming next :

- ◈ HKS integration
- ◈ Ontology-based controls
- ◈ SA-WSDL generation
- ◈ Integration with annotation GUI
- ◈ Open-sourcing