

```

graph LR
    QMainWindow --> QWidget
    QWidget --> StatusBarWidget
    QWidget --> MenuBarWidget
    QWidget --> QGraphicsViewWidget
    StatusBarWidget --> StatusBarWidget
    MenuBarWidget --> MenuBarWidget
    QGraphicsViewWidget --> QGraphicsViewWidget
  
```

```

classDiagram
    class World {
        <<QGraphicsScene>>
        wraps_around bool
        time QFloat
        size QVector2D
        time_step
        agents QVector<QSharedPointer<Entity>>
        render()
        add_entity()
        kill_entity()
        get_fricton()
    }
    class Entity {
        <<QGraphicsItem>>
        position
        velocity
        acceleration
        size
        colour
        mass
        life
        id
        neighbours
        visible
        neighbours
        update()=0
        render()=0
    }
    class EntityFactory {
        living_factory
        inert_factory
        make_new_entity()
    }
    class LivingEntityFactory {
        make_new_living_entity()
    }
    class InertEntityFactory {
        make_new_inert_entity()
    }
    class Ant {
        currentRole RoleAnt*
        vision
        velocityStrategy
        energy
        render()
        set_role()
        update_role_and_strategy()
    }
    class RoleAnt {
        context Ant*
        color
        update_role_and_strategy()
    }
    class RoleAntExplorer {
        color
        update_role_and_strategy()
    }
    class RoleAntWorker {
        color
        update_role_and_strategy()
    }
    class VelocityStrategy {
        context LivingEntity*
        compute_desired_velocity()=0
    }
    class VelocityStrategyBase {
        compute_desired_velocity()
    }
    class VelocityStrategyDecorator {
        wrapper VelocityStrategy*
        coef
        compute_desired_velocity()
        ctor(coef, wrapper)
    }
    class VelocityStrategyCohesion {
        comp...
    }
    class VelocityStrategyAlignment {
        comp...
    }
    class VelocityStrategySeparation {
        distance
        potential_exponent
        compute_desired_velocity()
    }
    World --> Entity
    Entity <|-- LivingEntity
    Entity <|-- InertEntity
    LivingEntity <|-- Ant
    Ant --> RoleAnt
    RoleAnt --> VelocityStrategy
    RoleAntExplorer --> RoleAnt
    RoleAntWorker --> RoleAnt
    VelocityStrategyDecorator --> VelocityStrategy
    VelocityStrategyDecorator --> VelocityStrategyCohesion
    VelocityStrategyDecorator --> VelocityStrategyAlignment
    VelocityStrategyDecorator --> VelocityStrategySeparation
    
```

Velocity Strategy Cohesion
comp...

Velocity Strategy Alignment
comp...

Velocity Strategy Separation
- distance - potential expansion
Compute desired velocity()